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# Biographies & obituaries

Folder 1



JANUARY 29, 1936

# U. C. PROFESSOR MOVES TO L. A.

**BERKELEY, Jan. 29.**—Dr. Ralph Beals, well known anthropologist, has gone South to accept a position on the faculty of the University of California at Los Angeles, where he will inaugurate a department of anthropology.

Dr. Beals, brother of Carleton Beals, well known writer, gave up a position as lecturer in anthropology on the Berkeley Campus, to become an associate professor in the same subject at U. C. L. A., and with the task of starting a new department.

Obtaining his doctor of philosophy degree at the University of California, Dr. Beals has been associated with the State institution for a number of years. He is a member of Phi Beta Kappa, national scholastic honor society, and Sigma Xi, scientific honor society. Dr. Beals has done extensive research work in the Southwest, among California Indians and also in Mexico, where he spent three years. For a year he was in charge at the national museum headquarters in Berkeley, where anthropological and other material was prepared for exhibition in national parks of the country.

Dr. Beals is the son of Mr. and Mrs. R. E. Beals, 1943 Berkeley Way, his mother being a former member of the Berkeley Board of Education. The Beals family formerly resided in Pasadena before coming to Berkeley to provide educational facilities for the two sons. Dr. and Mrs. Beals have three children, Ralph Carleton, 9; Alan R., 8, and Genevieve, 5.

Reference to Lieut. W.A. Bartlett, of the U.S. sloop-of-war Portsmouth, "now acting as alcalde of the town and district of San Francisco."

Bryant: What I Saw in California, 322, 1848.



## John Marsh

Charles Pickens in his Recess of War  
(London 1849) says: "A class-mate and early  
friend of mine, Mr John Marsh, after spending 18  
years on our western frontier, traversed New Mexico,  
and became the first settler in the interior of North  
California. He established himself beyond the  
mission villages, among the unreclaimed San Francisco  
Tribe, where the Spaniards were unwilling to venture.  
A year afterwards he was followed by Captain  
Sutter, a Swiss gentleman, sent from Missouri,  
who had fixed his residence on the tributary of the  
Sacramento, near the head of navigation for sea  
vessels." (101 New Ed. 1851).



Nov 11, 1929

# DR. MONSEN'S ACTIVE LIFE IS ENDED

Famous Explorer Ill But  
Twenty-Four Hours

COLORFUL HISTORY  
MARKS HIS LIFE

Work Among Indians Has  
National Recognition

Dr. Frederick Monsen, noted explorer, archaeologist and an outstanding authority on the American Indian, passed away at the Pasadena Hospital last evening after an illness of only twenty-four hours. Stricken with pneumonia as he returned to his home here from Chicago Saturday, he was rushed to the hospital but failed to rally. He was 66 years of age.

During his career of more than forty years in western exploration, Dr. Monsen achieved world-wide recognition. He was a member of the Royal Geographic Society of England and of scientific societies here and abroad. His lectures on the American Indian, illustrated with his remarkable photographs, are credited with playing a large part in arousing sentiment of Americans to the injustice done the Redskin in this country.

Having made his home in Pasadena between lecture tours and other trips since the war, Dr. Monsen was well known and affectionately regarded by hundreds of Pasadenans.

## Born in Norway

Dr. Monsen was born in Bergen, Norway, July 8, 1865, the son of Hans and Sophia Monsen, noted players of the Norwegian National Theater, whose founders and directors included such personages as Henrik Ibsen and Ole Bull. As a boy of four he came to America with his parents, who joined a pioneer colony of their countrymen, in Salt Lake City. They made the trip overland from St. Joseph in a covered wagon.

Despite the hardships which befell the pioneers in the strange environment, the imaginative lad early showed artistic tendencies, which were encouraged by his parents. His father, meanwhile, had taken up photography and the lad followed in his footsteps. His first job was as a photographer with the Union Pacific railroad, which had just completed the transcontinental line.

## With Indian Scouts

Then came the stirring days of Generals Miles and Crook when the young boy's knowledge of photography won for him the post of photographer with the Indian scouts. This started his long career as an explorer.

When Ole Bull, famous Norwegian violinist and an intimate friend of the Monsens, made his tour of America in 1875, young Monsen was with him, gaining his first knowledge of the stage and lecture platform. Between geological work for the government, he traveled with his parents, who had a stock company which toured the West and Southwest. He also played juvenile parts on the stage, appearing in such productions as "H. M. S. Pinafore."

Between 1891 and 1906 he made intensive investigations among the Indian tribes of Arizona, New Mexico, California and Old Mexico, collecting data and taking photographs. He also traveled extensively in the West Indies and South America.

## In Gold Rush

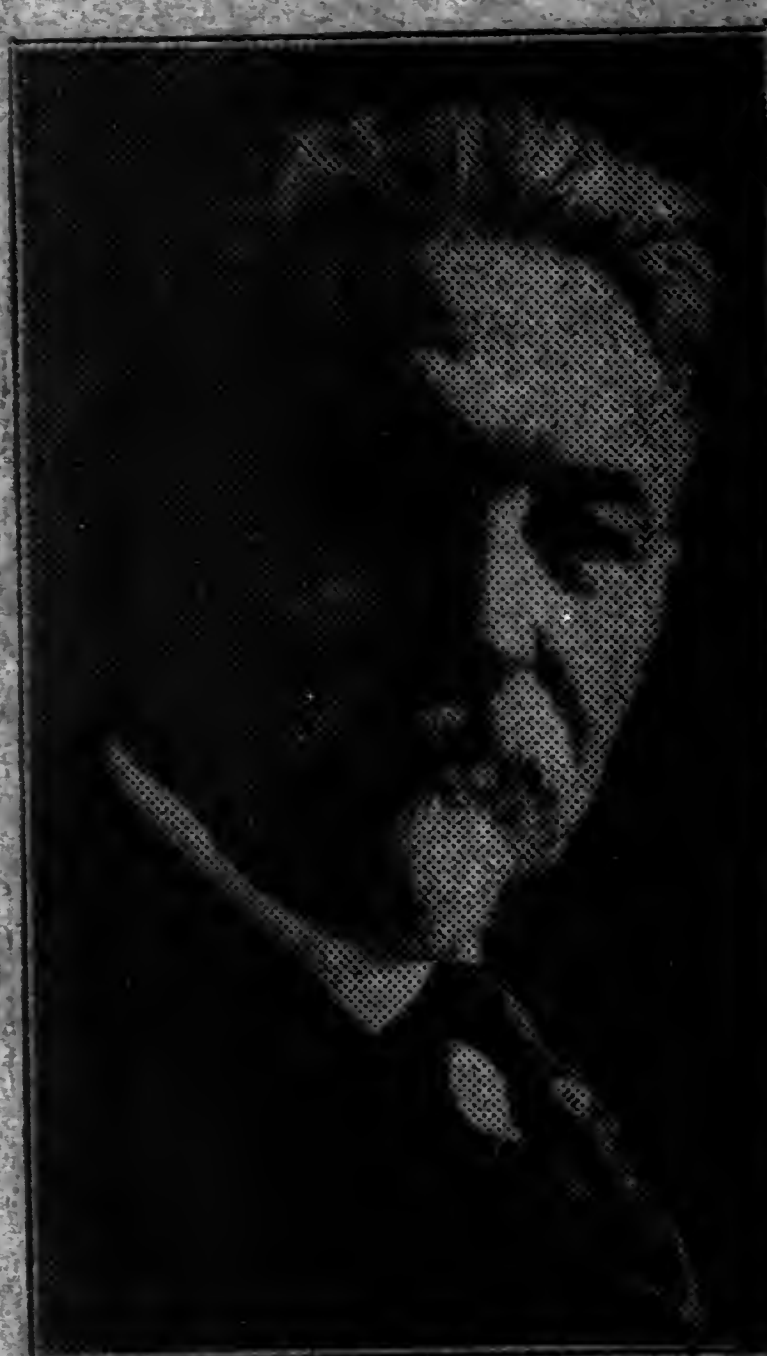
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During his career, Dr. Monsen enjoyed the intimate friendship of such great Americans as Theodore Roosevelt, John Muir, F. Hopkinson Smith, Admiral Peary and many explorers and statesmen.

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Among the honors that came to Dr. Monsen for his travels and explorations was the degree of Ph. D., bestowed upon him by the University of Christiania. He was one of the founders of the Explorers Club of New York and

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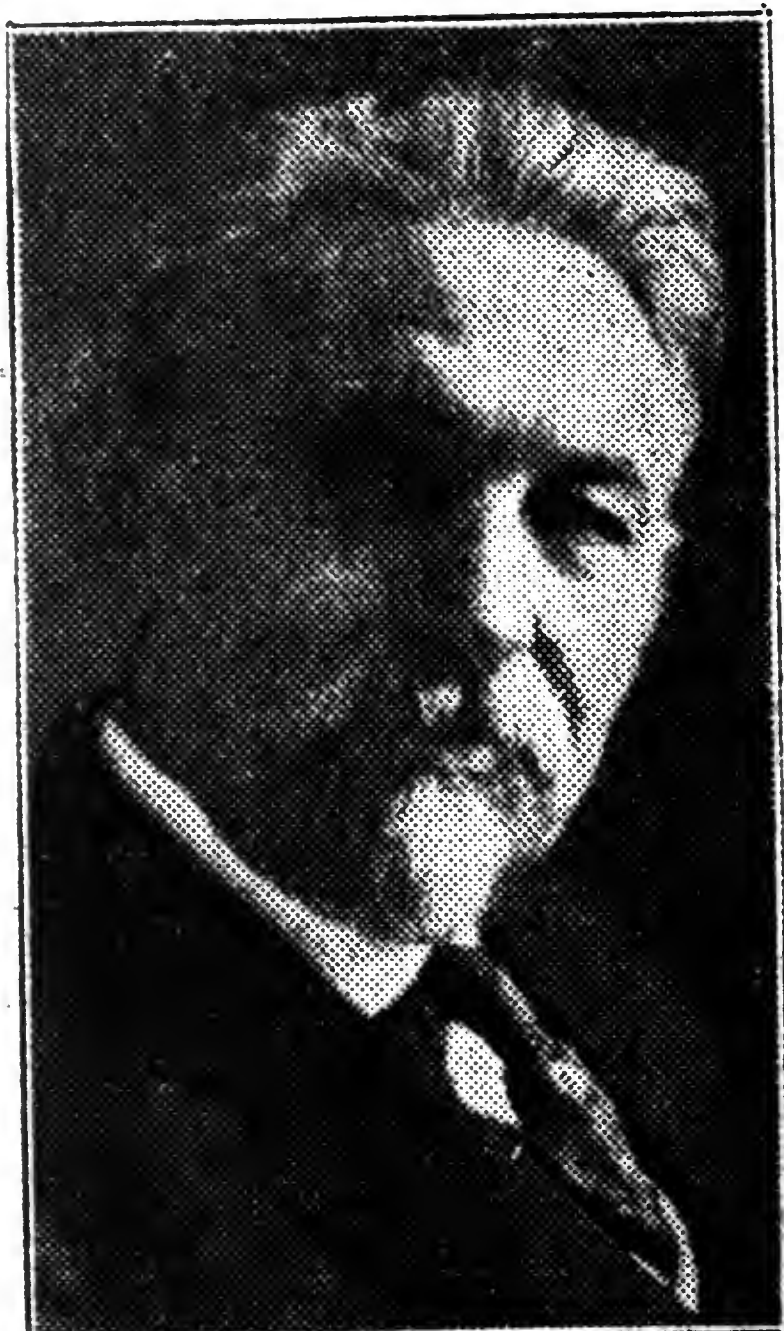
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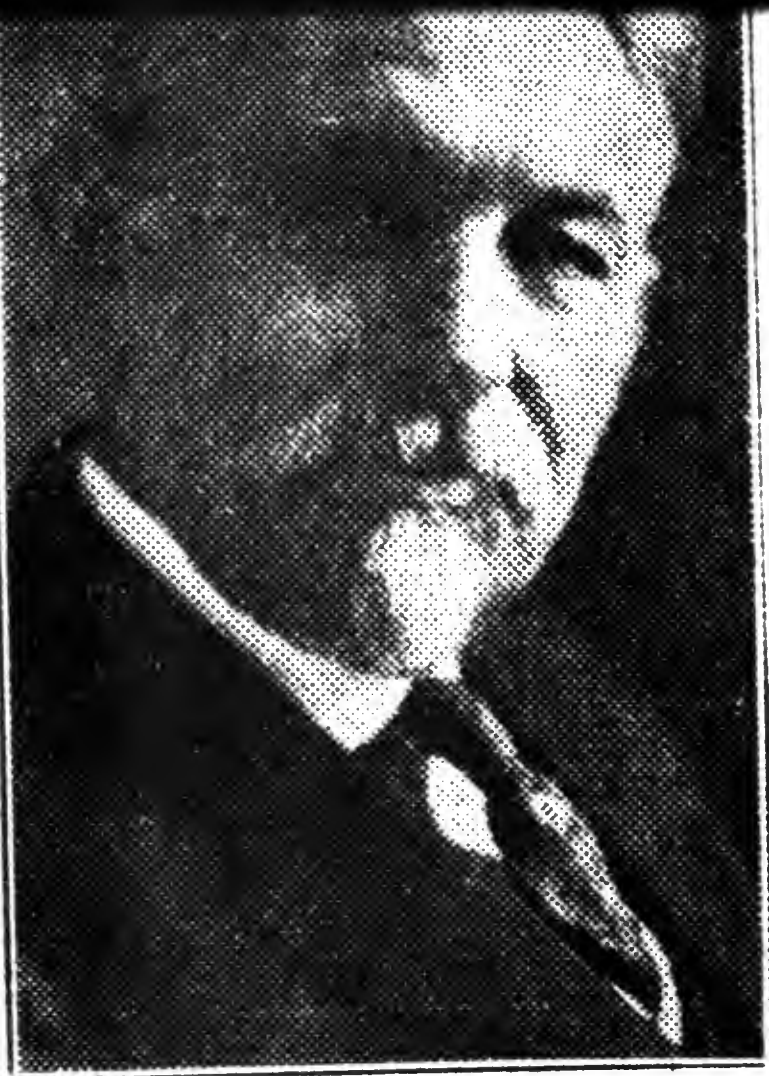
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Dr. Monsen leaves two sons, Courtenay, secretary of the Pasadena Board of Education, and Shavenau, who was his cameraman and secretary and two grandchildren, Sarah Leslie and David Courtenay.

Funeral services will be announced later. The body is at the mortuary of Reynolds & Eberle.



DR. FREDERICK MONSEN  
Explorer, Photographer Dies in  
Pasadena



WEDNESDAY, NOVEMBER 20

## F. E. LEUPP, WRITER

AND OFFICIAL DEAD

AND OFFICIAL, DEAD

Newspaper Man and Expert  
in Indian Affairs Held Im-  
portant Positions.

WROTE OF FAMOUS MEN



F. E. LEUPP.

Francis Ellington Leupp, nationally known as a newspaper writer and as an author of books, authority on Indian affairs, and for four years United States Indian commissioner, died yesterday at his residence, Stoneleigh Court, after a long illness. Death came as the result of a cerebral hemorrhage suffered about a month ago, but Mr. Leupp had been in poor health since early in June.

Notwithstanding his prominent official position during Mr. Roosevelt's second term and a part of Mr. Taft's term, it is primarily as a newspaper man that he was known here in the National Capital and, in fact, in the profession throughout the country. From 1889 until 1904 he was in charge of the Washington bureau of the New York Evening Post, and during that period he also served as editorial writer for The Star, his contributions on important topics having been widely read and noted.

### Successful Writer of Books.

As time went on, however, he embarked successfully on the writing of books, the results showing a wide divergence of theme, but an invariably thorough familiarity with subject matter and charm of style.

Having served as a member of the United States board of Indian commissioners under President Cleveland, Mr. Leupp developed the keenest possible interest in the problems connected with the nation's charges, an interest which led to his appointment by President Roosevelt as Indian commissioner, a post in which he served with distinction. He early became interested in the civil service reform movement and served as editor of Good Government, the official organ of the Civil Service Reform League.

Born in New York in 1849, Mr. Leupp attended Williams College, and was the recipient of three degrees from that institution, having been made a doctor of laws in 1910. He also received the degree of bachelor of laws from Columbia University in 1872. He married Miss Ada Lewis Murdock of New York and, after a time spent as editor and part owner of the Syracuse Herald came to Washington thirty-three years ago to represent the New York Evening Post.

### Sketches of Eminent Men.

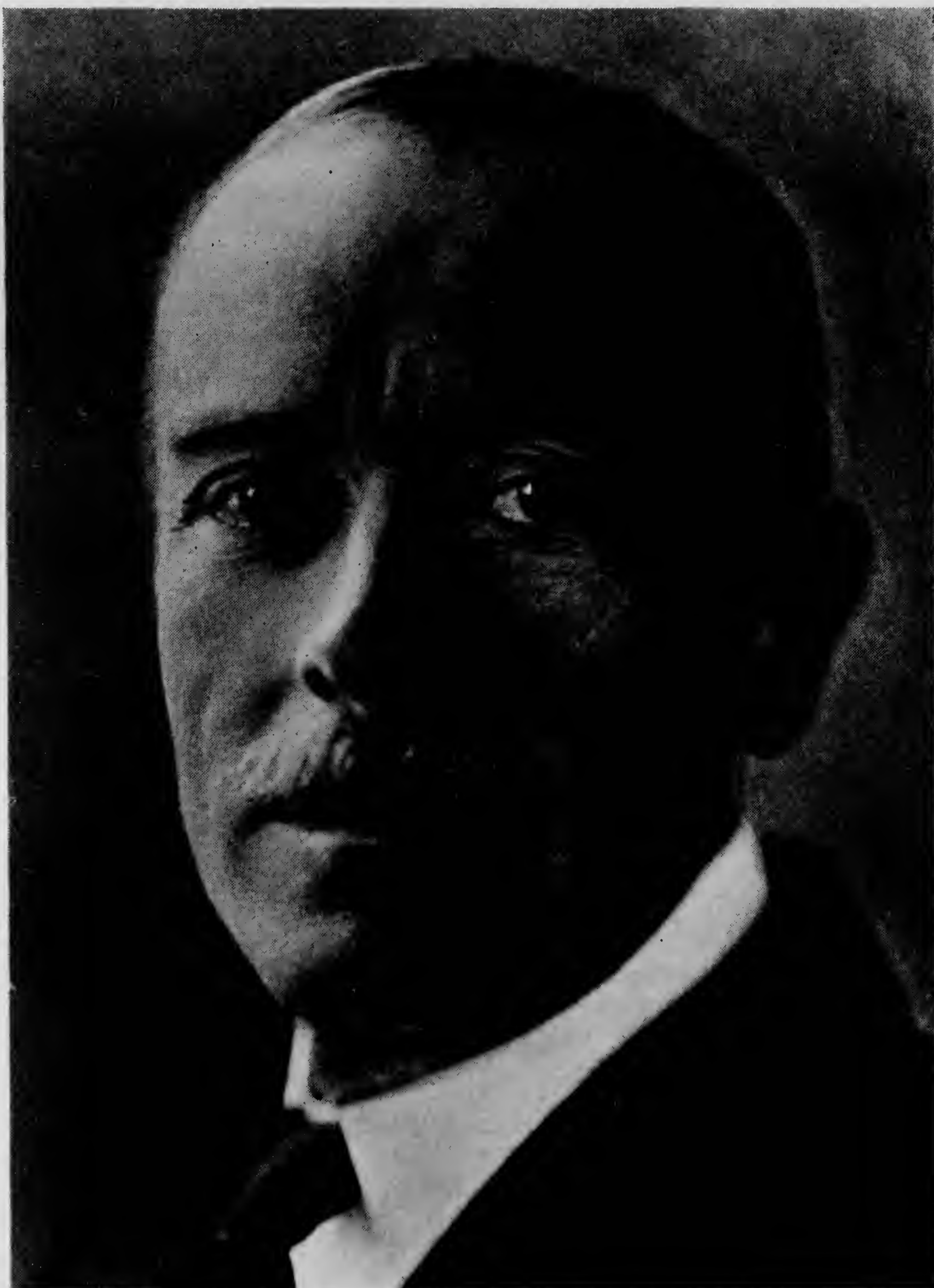
Mr. Leupp's latest book is "The Life of George Westinghouse," the proofs of which he read during his last illness. For a number of years he had contributed to leading magazines a series of sketches of eminent men under the pen name of "Tatler." These have been collected by Knopf Publishing Company and issued under the title of "National Miniatures." Mr. Leupp's identity with the pseudonym "Tatler" is now for the first time made known.

Among his other books are: "The Man Roosevelt," "The Indian and His Problem," "A Biography of William Howard Taft," "The Presidents of the United States," "In Red Man's Land," "A Day With Father" and "Walks About Washington." In the last named he gave the public in particularly facile style the benefit of his long and intimate personal acquaintanceship with the interesting environs of the National Capital. Mr. Leupp also had served as editor of a memorial volume to William Cullen Bryant, while at the time of his death he was engaged in writing his memoirs at the request of a large publishing house.

He was a member for many years of the Gridiron Club and took a prominent part in the numerous famous dinners given here by that organization of veteran correspondents. He also belonged to the Cosmos Club, the Williams Club of New York and the Sons of the American Revolution, and was a former member of the Chevy Chase Club.

### Members of Family.

Mr. Leupp is survived and by four children: Leupp, U. S. A.; Miss Mrs. Laurence Todd,ington newspaper co of this city, and Mr son of Pasadena, Cal he resided at 1813 taining until the pr summer home at Ty Definite arrange funeral have not ye



*Photographed by Underwood and Underwood.*

**DR. LIVINGSTON FARRAND**

Elected president of Cornell University to succeed Dr. Jacob Gould Schurman. President Farrand has been adjunct professor of psychology and professor of anthropology in Columbia University, president of the University of Colorado and chairman of the Central Committee of the American Red Cross.



In regard to the remarks relative to Mr. Schoolcraft, it is but justice to state that we were intimately acquainted with him, and cannot for a moment harbor the thought that he would have done anything to disparage the veracity of any one from any other motive than a desire to promote the truth. The statements of Mr. Catlin were at the time so remarkable, the ceremonies which he described being so unlike those of other Indian tribes, that Mr. Schoolcraft was justifiable in receiving the account with doubt, although he may have expressed his disbelief in stronger terms than he would have done had he been more intimately acquainted with the character of Mr. Catlin than he appears to have been.—[J. H.]

BARRY, *Clay County, Mo., August 12, 1872.*

DEAR SIR: Though a stranger to you, I take the liberty of addressing you this note as important to science and to the ethnology of our country, as well as important to the reputation of one who has devoted much of a long and hazardous life in portraying and perpetuating the customs of the dying races of man in America. Mr. Schoolcraft sent me, some years past, a copy of a large work he had published for the Government of the United States on the North American Indians, and of which work some thousands of copies were presented by the Government to the libraries of the institutions of the New and the Old World. In this work I find that Mr. Schoolcraft denies the truth of Mr. Catlin's description of the Mandan religious ceremonies—the truth of his assertion that the Mandan youths suspended the weight of their bodies by splints run through the flesh on the breast and shoulders, &c.; and asserts, also, that his whole account of the Mandan religion is all wrong. It is a great pity that Mr. Schoolcraft, who never visited the Mandans, should have put forth such false and unfounded assertions as these on a subject so important to science, and so well established by proved facts.

I had the sole control of the American Fur Company's business with the Mandans, and lived in their village, for the space of thirteen years, from 1822 to 1835, and was doubtless the first white man who ever learned to speak their language. In the summer of 1832 Mr. George Catlin was a guest in my fort at the Mandan village, observing and learning the customs of those interesting and peculiar people, and painting the portraits of their celebrated men, of which he made many and with great exactness. It was during that summer that Mr. Catlin witnessed the Mandan religious ceremonies, the O-kee-pa described in his notes of travels among the North American Indians, and to which Mr. Schoolcraft has applied the insulting epithet of falsity in his great work. By the certificate published by Mr. Catlin, signed by my chief clerk and myself, on the 28th day of July, 1832, in the Mandan village, certifying that we witnessed, in company with Mr. Catlin, the whole of those four days' ceremonies, and that he has represented in his four paintings, then and there made of them, exactly what we saw, and without addition or exaggeration, it will be seen that I witnessed those scenes with



Mr. Catlin and interpreted their whole meaning for him as they are described in his work. Since the extinction of this friendly tribe, and the end of this peculiar and unaccountable custom, and in the eighty-fifth year of my own age, from a sense of duty to my ancient friend Mr. Catlin, and a wish for the truthfulness of history, I have taken the liberty of committing to your care and for your use, as you may be disposed, the foregoing statements.

Yours, truly,

JAMES KIPP.

Professor HENRY,  
*Smithsonian Institution.*

*Reft. Smithsonian Inst. for 1872.*

1873

## NOTES RELATIVE TO GEORGE CATLIN.

---

George Catlin was born in Wilkesbarre, in the valley of Wyoming, Pennsylvania, in the year 1796. His father was a lawyer of considerable reputation, and designed his son to practice the same profession, which he did for a short time; but his natural inclination for art was so strong that after two or three years he abandoned the idea of becoming a lawyer and removed to Philadelphia, where he pursued his occupation principally as a portrait-painter. It was here that an incident occurred which determined that future career which has made his life and labors famous. A party of roving Indians visiting Philadelphia, decorated with the barbaric splendor of their native dresses, by their bold and martial bearing, and by their unconstrained attitudes and gestures, so impressed him that he determined to become the historian of this remarkable race, which was rapidly becoming extinct, and to devote himself to the illustration of their arts, types, manners, and customs.

With this purpose in view, in 1830 and 1831, he accompanied Governor Clarke, of Saint Louis, then superintendent of Indian Affairs, who was engaged in making treaties with the Winnebagoes, Monomonees, Shawnees, and Sacs and Foxes. In 1832 he ascended the Missouri, on the steamer Yellowstone, to Fort Union, and afterward returned, in a canoe, with two companions, a distance of 2,000 miles, visiting and painting all the tribes, so numerous at that time, on the whole length of the river. The next year he went up the Platte as far as Fort Laramie, and extended his journey to Great Salt Lake. In 1834 he explored the Mississippi as far as the Falls of Saint Anthony, and visited the Ojibbeways and other tribes, and returned to Saint Louis, a distance of 900 miles, in a bark canoe. In 1835 he made a second visit to the Falls of Saint Anthony, and thence proceeded to the Red Pipestone region on the Couteau des Prairies, and then, returning to the Falls of Saint Anthony, descended the river a second time in a canoe to Saint Louis. In 1836 he accompanied Colonel Dodge on an expedition to the Comanches and other southwestern tribes; and in 1837 visited Florida for the purpose of painting the Seminoles and Eucheas. During these eight years he visited fifty different tribes of North American Indians, taking sketches all the time. Having thus accumulated a large number of paintings representing the portraits of the principal men and the tribes and the pictures of savage life, he exhibited them in various parts of the United States, especially in Washington, Philadelphia, New York, and Boston, with such success that, in 1839, he went to London and Paris, where the artist and his collections attracted general attention. From this time until 1852 he remained in Europe, being everywhere treated



with marked distinction. In 1852, when fifty-six years old, his enthusiasm undiminished by his advancing age, and with a vigor and endurance rarely found even in the young men of our day, he explored, with the same object, the forests of South America. He went to Venezuela, and visited the Orinoco, Amazon, and Essequibo, taking a great number of pictures on his route. He afterward crossed the continent to Lima, and going northward visited the mouth of the Columbia River, Nootka Sound, Alaska, and to The Dalles, and up the Columbia River to Walla-Walla, thence up to the Salmon River Valley, and across the mountains into Snake River Valley at Fort Hall, thence to the Great Falls of the Snake River, and returning to Portland proceeded to San Francisco and San Diego. From San Diego he crossed the Colorado of the West and the Rocky Mountains, and descended the Rio Grande del Norte in a canoe to Matamoras. From Matamoras he set out for Sisal, in Yucatan, and thence proceeded to Havre. Starting again from that place in the fall of the same year, 1855, he went to Rio Janeiro and Buenos Ayres. Ascending the Paraguay and Parana, he crossed the Entre Rios Mountains to the head-waters of the Uruguay, which he descended to the mouth of the Rio Negro and returned to Buenos Ayres. From this place, in 1856, he took passage in a sailing-vessel coasting the whole length of Patagonia, and then north to Panama; thence to Chagres, to Caracas in Venezuela, to Santa Martha and Maracaibo. In these six years, completing his Indian studies, he retired to Brussels, and, with pen and brush, again set himself to recording the results of his travels, adding to his history of the North American Indians that of the Indians of South America. He remained at Brussels until his return to this country in 1871.

During his life, and in periods of rest from his travels, he wrote and published the following works :

1. Catlin's Notes of Eight Years' Travels among the North American Indians, 2 vols., 1851.
2. Catlin's Notes of Eight Years' Residence in Europe, 2 vols, 1848.
3. Catlin's North American Portfolio, 1844.
4. Okee-pa, a Religious "Mandan" Ceremony.
5. Life among the Indians, (book for youth,) 1867.
6. Last Rambles among the Indians of the Rocky Mountains and Andes, 1867.
7. Shut Your Mouth, 1869.
8. Uplifted and Subsided Rocks of America, 1870.



*Smithsonian Rept. for 1872, 1873.*

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George Catlin was born in Wilkesbarre, in the valley of Wyoming, Pennsylvania, in the year 1796. His father was a lawyer of considerable reputation, and designed his son to practice the same profession, which he did for a short time; but his natural inclination for art was so strong that after two or three years he abandoned the idea of becoming a lawyer and removed to Philadelphia, where he pursued his occupation principally as a portrait-painter. It was here that an incident occurred which determined that future career which has made his life and labors famous. A party of roving Indians visiting Philadelphia, decorated with the barbaric splendor of their native dresses, by their bold and martial bearing, and by their unconstrained attitudes and gestures, so impressed him that he determined to become the historian of this remarkable race, which was rapidly becoming extinct, and to devote himself to the illustration of their arts, types, manners, and customs.

With this purpose in view, in 1830 and 1831, he accompanied Governor Clarke, of Saint Louis, then superintendent of Indian Affairs, who was engaged in making treaties with the Winnebagoes, Monomonees, Shawnees, and Sacs and Foxes. In 1832 he ascended the Missouri, on the steamer Yellowstone, to Fort Union, and afterward returned, in a canoe, with two companions, a distance of 2,000 miles, visiting and painting all the tribes, so numerous at that time, on the whole length of the river. The next year he went up the Platte as far as Fort Laramie, and extended his journey to Great Salt Lake. In 1834 he explored the Mississippi as far as the Falls of Saint Anthony, and visited the Ojibbeways and other tribes, and returned to Saint Louis, a distance of 900 miles, in a bark canoe. In 1835 he made a second visit to the Falls of Saint Anthony, and thence proceeded to the Red Pipestone region on the Couteau des Prairies, and then, returning to the Falls of Saint Anthony, descended the river a second time in a canoe to Saint Louis. In 1836 he accompanied Colonel Dodge on an expedition to the Comanches and other southwestern tribes; and in 1837 visited Florida for the purpose of painting the Seminoles and Eucheas. During these eight years he visited fifty different tribes of North American Indians, taking sketches all the time. Having thus accumulated a large number of paintings representing the portraits of the principal men and the tribes and the pictures of savage life, he exhibited them in various parts of the United States, especially in Washington, Philadelphia, New York, and Boston, with such success that, in 1839, he went to London and Paris, where the artist and his collections attracted general attention. From this time until 1852 he remained in Europe, being everywhere treated

with marked distinction. In 1852, when fifty-six years old, his enthusiasm undiminished by his advancing age, and with a vigor and endurance rarely found even in the young men of our day, he explored, with the same object, the forests of South America. He went to Venezuela, and visited the Orinoco, Amazon, and Essequibo, taking a great number of pictures on his route. He afterward crossed the continent to Lima, and going northward visited the mouth of the Columbia River, Nootka Sound, Alaska, and to The Dalles, and up the Columbia River to Walla-Walla, thence up to the Salmon River Valley, and across the mountains into Snake River Valley at Fort Hall, thence to the Great Falls of the Snake River, and returning to Portland proceeded to San Francisco and San Diego. From San Diego he crossed the Colorado of the West and the Rocky Mountains, and descended the Rio Grande del Norte in a canoe to Matamoras. From Matamoras he set out for Sisal, in Yucatan, and thence proceeded to Havre. Starting again from that place in the fall of the same year, 1855, he went to Rio Janeiro and Buenos Ayres. Ascending the Paraguay and Parana, he crossed the Entre Rios Mountains to the head-waters of the Uruguay, which he descended to the mouth of the Rio Negro and returned to Buenos Ayres. From this place, in 1856, he took passage in a sailing-vessel coasting the whole length of Patagonia, and then north to Panama; thence to Chagres, to Caracas in Venezuela, to Santa Martha and Maracaibo. In these six years, completing his Indian studies, he retired to Brussels, and, with pen and brush, again set himself to recording the results of his travels, adding to his history of the North American Indians that of the Indians of South America. He remained at Brussels until his return to this country in 1871.

During his life, and in periods of rest from his travels, he wrote and published the following works :

1. Catlin's Notes of Eight Years' Travels among the North American Indians, 2 vols., 1851.
2. Catlin's Notes of Eight Years' Residence in Europe, 2 vols, 1848.
3. Catlin's North American Portfolio, 1844.
4. Okee-pa, a Religious "Mandan" Ceremony.
5. Life among the Indians, (book for youth,) 1867.
6. Last Rambles among the Indians of the Rocky Mountains and Andes, 1867.
7. Shut Your Mouth, 1869.
8. Uplifted and Subsided Rocks of America, 1870.



in Franklin County, Southern Central Pennsylvania, within 600 feet of the ancient war-lodge of the Senecas.

184 to 186, inclusive. Arrow-heads from Tennessee.

187 to 196, inclusive. Fragments of pottery, from some very remarkable mounds, three miles southeast of Franklin, Williamson County, Tenn.

197. Fragment of pottery, from South Hadley, Mass.

198. Fragment of pottery, from mound in Ohio.

199. Fragment of brick, from mound in Iowa.

200 to 203, inclusive. Fragments of pottery, from mounds in Georgia.

204 to 206, inclusive. Fragments of pottery, from mound in Maury County, Tennessee.

*Arrow-heads.*—Three packages of these were sent in one of the boxes, respectively collected in the New England States, in the Western States, and in the Southern States, and the aforesaid division of States marked on the packages accordingly. It had been my aim to collect arrow-heads of the various tribes of Indians, and to have preserved them thus distinct in the cabinet; but I found that the differences in shapes, style, &c., were so slight (if at all distinct) as not to justify the trouble.

#### *Ancient pottery.*

All of the pottery sent is from an ancient burial-place in Arkansas, with *one* exception—a portion of a bowl, (say one-half,) broken, I think, in two pieces, and in appearance so very thick and clumsy, compared with the other specimens, that its recognition is a matter of no difficulty. This bowl is from an Indian grave at "Hamilton Place," (residence of Gen. Lucius Q. Polk,) Maury County, Tennessee.

At "Maple Grove," Maury County, Tennessee, February 7, 1860, Jerome B. Pillow, esq., (brother of Gen. Gideon J. Pillow,) made the following statement in regard to the ancient pottery discovered by him, and then and there presented to me:

"The spot where this pottery was found is in Phillips County, Arkansas, adjacent to the Mississippi River, and (measured along the river) eighteen and three-fourths miles below Helena."

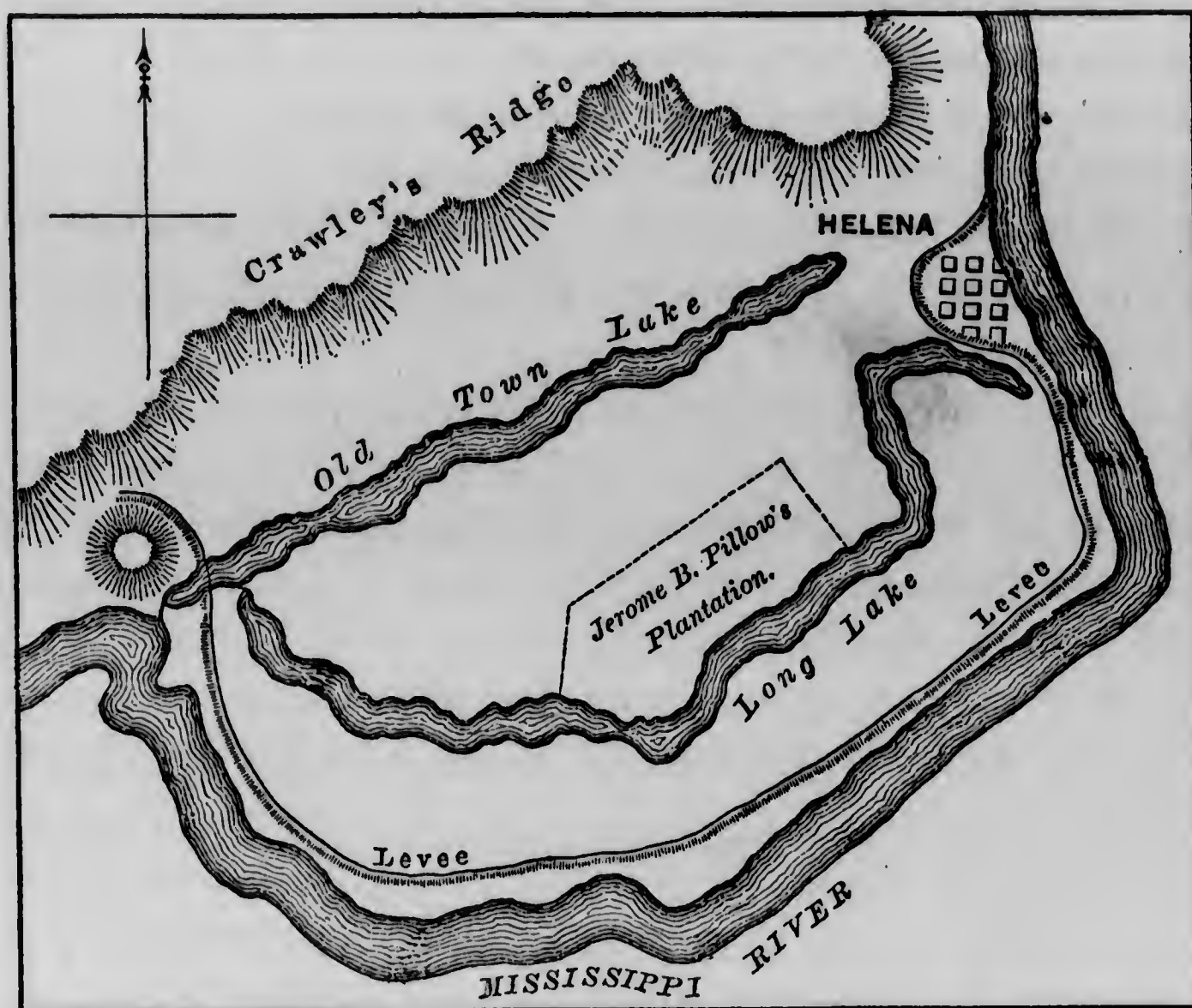
A map of the locality is given in the accompanying Fig. 1.

The point designated A is the ancient burying-place where the pottery was procured.

In the construction of the levee across Old Town Lake and Long Lake a vast quantity of earth was required to make the embankment, and to procure which Mr. Jerome B. Pillow commenced removing material from a site which proved to have been a most extensive cemetery. Hundreds of human skeletons of all ages and of both sexes were exhumed, and with them many specimens of pottery of varied shapes and sizes. The skeletons were found buried in a sitting posture, and from three to ten feet below the surface; the bones in all cases in a perfect state of preservation.

Trees from three to five feet in diameter were growing over the graves, one, a "sassafras," five feet in diameter, had come to maturity, died, then withered away, leaving only its roots in a sound condition. The negro

Fig. 1.



laborers, with superstitious terror, would fain have fled from their work on the first discovery of the bones, and they were persistent in destroying the pottery to prevent its removal. Their aim was to conceal in the dump or embankment both bones and pottery. It was, therefore, with some difficulty perfect specimens were procured by Mr. Pillow, and those obtained (my gift comprised about one-third of the number) were brought to his residence in Maury County, Tennessee. In this rare collection there was one vessel, capable of holding half a gallon, in the shape of an animal. It bore great similarity to a vessel, which some time before I had examined, brought from the pyramids, Egypt, by the Rev. Dr. Burgess, of Dedham, Mass.

*Smithsonian Report for 1872, 436-438, 1873.*

#### ON THE ACCURACY OF CATLIN'S ACCOUNT OF THE MANDAN CEREMONIES.

BY JAMES KIPP.

We publish the following letter as an act of justice to the memory of the late Mr. Catlin, and as a verification of the truth of his account of a very interesting ceremony among the Mandan Indians, a tribe now extinct. The ceremony was especially interesting in its resemblance to some of the self-inflicted tortures of the devotees of eastern superstitions.





*Photo by DeWard, New York*

**MR. WILL S. TAYLOR, MURAL ARTIST**

Mr. Taylor is at present engaged on the great mural canvases in the North Pacific hall of the American Museum. These decorations are painted to show the industries and ceremonies of the Indians of the North Pacific Coast.

[See reproduction in sepia of a photograph of one of Mr. Taylor's recent canvases opposite page 104]

*Am. Museum Journal - March 1915.*

Reft. U.S. Nat. Museum for 1889.

1891.

~~APPENDIX C~~

BIOGRAPHICAL NOTICE OF JAMES STEVENSON.

James Stevenson was born in Maysville, Ky., December 24, 1840. His father, who settled in Kentucky early in the century, was a Virginian, and, it is believed, probably of that hardy Scotch-Irish family of Indian fighters and riflemen to which belonged Col. Hugh Stevenson, of the Berkeley Riflemen, and his brothers, Col. Richard and Col. Valentine Stevenson, all soldiers of the Revolution. He was a vigorous, active boy, and at an early period showed an enthusiasm to explore the Rocky Mountain region and to see the Indian in his home. He read all the books of travel and adventure he could borrow, and at the age of thirteen he ran away from home and joined a party of the Hudson Bay Fur Company's traders, bound up the Missouri River. Dr. F. V. Hayden was a passenger on the same packet, on his way to explore the fossiliferous regions of the Upper Missouri and Yellowstone. He noticed that Stevenson had taste for natural history, and invited him to join him in his work.

The boy showed tireless energy in collecting objects of natural history and ethnology along the buttes, mesas, and river benches of the *Mauvaises Terres*, and in time became an explorer of intrepid courage and indefatigable zeal.

He remained in the region of the Upper Missouri and the Yellowstone mouth for three years, and became acquainted with the Crows, Blackfeet, Gros Ventres, and other Indians, up to that time little changed by intercourse with white men, and acquired a knowledge of their customs and characteristics.

In 1857 the Pacific Railroad surveys of the Government having been fairly begun, Stevenson, still an assistant of Professor Hayden, was attached to Lieut. G. K. Warren's party, and subsequently to that of Lieut. F. W. Reynolds. At this time he made a useful collection of fossil mammals and reptiles, and another illustrating the zoology and botany of the "Bad Lands." The labor and exposure incident to exploration at that time can not be properly appreciated in these days of rapid and luxurious travel.

In 1861 James Stevenson enlisted as a private soldier in the Thirteenth Regiment, New York Volunteers, and remained in the service until 1865. He took part in all the heavy battles of the Army of the



Potomac and won an officer's commission. After the war he again joined Professor Hayden in his exploration of the Upper Missouri, under the auspices of the Philadelphia Academy of Natural Sciences.

Soon after the return of peace, the Pacific Railroad project was taken up by Congress. Among the Western members of the House who became its advocates was General John A. Logan, who took the lead in combating the statement that the Territories had no coal. He maintained that coal existed in abundance, and that it could be located by a proper geological survey of the region. Stevenson was his principal authority for his statements, and urged upon him the necessity for such surveying works. After consultation with Professor Baird, General Logan, in the winter of 1867, proposed an amendment to the sundry civil bill authorizing the organization of a geological survey under the direction of Professor Hayden, and by a vigorous effort secured its passage.

The legislation of 1867 was the beginning of the geological and geographical survey of the Territories. Stevenson was made the executive officer of the new organization, and retained this position during its entire existence.

His tastes were rather toward ethnology than geology, and his winters among the Blackfoot and Sioux Indians were occupied in part in studying their customs and their dialects.

From 1868 to 1878 he took part in all the adventures of the Hayden survey; with it he explored almost all of the Territories, and had a share in bringing to light the hidden marvels of Yellowstone Park, and in urging its retention as a public reservation. He followed the great rivers of the continent to their sources, and discovered a new path across the Rocky Mountains. He ascended the Great Teton, and verified an Indian tradition of the presence of a stone altar upon its top.

His frontier experience fitted him for understanding thoroughly the requirements of explorers in the field. He was a good judge of character and showed much tact in planning and expediting the operations of the mixed trains engaged in the survey work. He led working parties of experts trained in topography, geology, and natural history over the unexplored regions of Nebraska, Colorado, New Mexico, Montana, Wyoming, Idaho, Utah, and Dakota.\*

When the various geological and geographical surveys were consolidated in 1879, Mr. Stevenson became associated with the operations of the Bureau of Ethnology, under Major Powell, and continued his investigations of the Indians. When Clarence King resigned the directorship of the new geological survey and Major Powell was selected to succeed him, Mr. Stevenson was appointed the executive officer of the latter organization. In this new trust he had charge of outfitting and

\* His work was chiefly in the following regions: 1851-'53, Upper Missouri. 1859-'60, Wyoming and Montana (then Nebraska), with Reynolds. 1866, Bad Lands in Dakota, with Hayden. 1867, Nebraska, with Hayden. 1868, Wyoming, with Hay-

supplying its parties in the field and of its business operations in the East. His relations with the members of both Houses of Congress, during the many years he appeared before that body in the interests of the U. S. Geological Survey and other scientific organizations, were always pleasant, and the members of Congress, of both parties, had faith in his integrity. Senator Edmunds once declared on the floor of the Senate, when some Senator proposed a reduction in the salaries of the director and executive officer of the Geological Survey, that Mr. Stevenson was "one of the best workers in the world."

In 1879 he began the exploration of the prehistoric cliff and cave dwellings of Arizona and New Mexico, unearthing an extended series of buried ruins and making a large invaluable collection of ancient pottery, costumes, weapons, and ceremonial and industrial utensils, now in the National Museum. He made a study of the religious practices of the Zuñi tribe of Indians and the history and folk lore of the Navajos and the Moquis. In this latter work he had a faithful assistant in Mrs. Stevenson, who made an especial study of the domestic and religious side of the Indian character. It was a source of regret to Mr. Stevenson that his duties with the Survey prevented him from completely publishing the investigation he had planned, and it remains for his widow to complete for publication the results of the work which they began together.

In 1886, while exploring some of the highest mesas of Arizona and New Mexico, he was attacked by that singular disease of those regions known as "mountain fever," from which he partially recovered after his return to the East. In spite of the remonstrances of his friends he spent the season of 1887 among the ruins in the Tewan Mountains of New Mexico and at the pueblo of Sia, where he found a rich field for study. He discovered that the Sia, like the Moki, hold ceremonials with the rattlesnake (a secret most jealously guarded by these Indians), and he succeeded in obtaining one of the ancient vases in which the snakes are each year gathered. His collection of idols and fetishes from Sia is the rarest yet obtained from any pueblo.

When he came East in November he was suffering from valvular heart trouble, and, after a brave fight for life, died in New York City July 25, 1888.

The full story of his useful life would fill a book. His resources when leading a party through a wild district were limitless, and he was always ready to meet, by quick action and apt understanding, any accident or miscarriage in the field. One of his associates tells the following incident, which illustrates the readiness of his faculties:

den. 1869, Colorado and New Mexico, with Hayden. 1870, Wyoming and Utah, with Hayden. 1871, parts of Utah, Idaho, Montana, and Yellowstone Park. 1872, parts of Idaho, Wyoming, and Yellowstone Park. 1873-'76, Colorado, under Hayden. 1877, Wyoming and Utah, with Hayden. 1878, Yellowstone National Park, with Hayden. 1879-'87, among the Navajos and Pueblos of New Mexico and Arizona and Mission Indians of Southern California, under Major Powell.



In July, 1871, the Hayden survey reached the shores of the Yellowstone Lake, and as it came into camp for the first time on its banks, the beautiful sheet of water courted navigation. No provision whatever had been made for building a boat—the thought had not entered the minds of Dr. Hayden or Mr. Stevenson when they outfitted for the exploration, and nothing therefore was taken into the luggage of the party and its pack-train for such a contingency. As the members of the party gazed with delighted eyes upon the broad expanse of this big mountain lake, a general desire to sail out to the islands upon its waters was loudly expressed, coupled with regret that no fit means for so doing was available, rafting being wholly inadequate. Stevenson said nothing, but quietly took the cook's axe, called two of the packers and went with them into a thicket of young birch and spruce trees, where he speedily trimmed out the ribs and gunwales of a double-ended and skiff-shaped boat. He lashed these into place and then took one of the cargo covers—a large square sheet of heavy canvas—with which he neatly covered this rude frame. A small mast was stepped, and a pair of oars adjusted as they were hewn out, together with a large steering sweep. He began this work about 2 o'clock in the afternoon; just before nightfall or dark (about 9 o'clock then and at that place) the little boat, some 13 feet in length, was launched, and Mr. Stevenson pushed out from the shore for a brief trial trip. The boat was a perfect success, and by its aid a complete hydrographic survey was made before the party left that region.

In ways like this he overcame the many unforeseen obstacles which arise in the path of a scientific exploring party. Climbing mountains, winding through forests and cañons, crossing ugly, treacherous streams and arid plains, in heat or in cold, in rain or in sunshine, or meeting hostile savages, Mr. Stevenson was always in the front, always ready, and always genial, and always the quiet and resolute master of the situation.

Three descriptive and illustrated catalogues of archæological and pueblo collections were prepared by Mr. Stevenson and were published by the Bureau of Ethnology. He also prepared for publication papers relating to the myths, ceremonials, and sand paintings of the Navajo Indians, and to the archæological remains of the southwest.

The death of James Stevenson was a positive loss to the institutions to which he devoted his life, viz, the U. S. Geological Survey, National Museum, and Bureau of Ethnology, and to scientific explorations. No offers however flattering could allure him from his life's work. He labored from a love for truth, and was ever ready to lend his aid to any movement for the advancement of science. His modesty and unselfishness won for him the esteem of all who knew him.



IN MEMORIAM

**William Wells Newell**

BORN JANUARY 24, 1839

DIED JANUARY 21, 1907

INSPIRER AND PROMOTER OF FOLK-LORE RESEARCH  
IN AMERICA

FOUNDER OF THE AMERICAN FOLK-LORE SOCIETY  
AND ITS EFFICIENT SECRETARY SINCE ITS BEGINNING  
IN 1888

EDITOR OF THE JOURNAL OF AMERICAN FOLK-LORE  
FROM 1888 TO 1900

EDITOR OF THE MEMOIRS OF THE AMERICAN FOLK-  
LORE SOCIETY, 1894-1906

*Journ. Am. Folk-Lore, vol. 19. 1906.*



WILLIAM WELLS NEWELL  
1839-1907



*Resolutions on the Death of William Wells Newell.* 67  
*Journ. Am. Folk-Lore* - Vol. 20. 1907.  
RESOLUTIONS ON THE DEATH OF WILLIAM WELLS  
NEWELL.

OF THE AMERICAN FOLK-LORE SOCIETY.

At a meeting of the General Council of the American Folk-Lore Society, called by the President, on Wednesday, January 23, 1907, to take action on the death of the Permanent Secretary, Mr. William Wells Newell, the following resolutions were unanimously adopted:

WHEREAS, the Council has heard with great sorrow of the death of William Wells Newell, the Permanent Secretary of this Society, through whose initiative the Society was founded, and to whose untiring devotion and steadfast loyalty the development of the study of Folk-lore in America is so largely due; therefore be it

*Resolved*, that the members of the Council desire to express their sense of the deep obligation which all students of Folk-lore owe to Mr. Newell, and their feeling of personal loss in being thus deprived of the wise counsel and enthusiastic support which were never sought in vain. And be it further

*Resolved*, that this resolution be spread upon the records, and be sent, with assurances of the deepest sympathy, to the members of Mr. Newell's family.

OF THE BOSTON BRANCH OF THE AMERICAN FOLK-LORE SOCIETY.

At a meeting of the Boston Branch of the American Folk-Lore Society, on January 22, 1907, the following resolutions were passed.

*Resolved*, that the members of the Council of the Boston Branch of the American Folk-Lore Society, deeply affected by the death of William Wells Newell, spread upon the records of the Society their grief at the loss of the Vice-President of the Branch from its organization, and express their recognition of the great value of his enthusiastic and indefatigable devotion to the objects of the Society.

*Resolved*, that in the death of Mr. Newell, the founder of the American Folk-Lore Society, the cause of Folk-lore in this country has lost its most ardent worker and greatest friend.

*Resolved*, that the members of the council extend to the family of their lamented friend and co-laborer their heartfelt sympathy at the loss of one whose culture and warm heart greatly endeared him to a large circle of appreciative and devoted friends.

OF THE CAMBRIDGE BRANCH OF THE AMERICAN FOLK-LORE SOCIETY.

At a meeting of the Council of the Cambridge Branch of the American Folk-Lore Society, held on Tuesday, January 22, the following resolutions were unanimously adopted:—



WHEREAS, the members of the Cambridge Branch of the American Folk-Lore Society have heard with deep sorrow of the death of the founder of the Society, Mr. William Wells Newell, to whose interest and devotion the success of the Cambridge Branch is so largely due; therefore be it

*Resolved*, that we, the members of the Cambridge Branch of the American Folk-Lore Society, do hereby express our sense of the irreparable loss which the Society has sustained in the death of Mr. Newell, and our appreciation of his kindness and never-failing helpfulness in all that pertained to the work of the Society. And be it further

*Resolved*, that this minute be spread upon the records of the Cambridge Branch, and sent to the members of Mr. Newell's family.

## WILLIAM WELLS NEWELL.

WILLIAM WELLS NEWELL died at Wayland, Massachusetts, on January 21, 1907. The funeral service was held in the Wayland Unitarian Church on January 24, which was his sixty-eighth birthday. His last illness was very brief, and he was busily occupied with his literary studies until within a few days of his death.

Mr. Newell was the son of the Rev. William Newell, minister of the First Parish Church in Cambridge, and of Frances Boott (Wells) Newell. He was born in Cambridge in 1839, and lived there throughout almost the whole of his life. He was graduated from Harvard College in 1859 and from the Harvard Divinity School in 1863. Then he was settled for a while as minister in Germantown, Pennsylvania. But after a short period of service he gave up the ministry and turned to the pursuit of literature and scholarship. For a time he followed the profession of teaching, and from 1868 till 1870 was a tutor in Philosophy at Harvard. During the greater part of his life, however, he held no academic position, but belonged to the body of private scholars which has never been numerous in the United States. The range of his interests was wide and his writings were correspondingly various; and he possessed an uncommonly graceful style in both prose and verse. Of his contributions to general literature, his translations from Chrétien de Troyes ("King Arthur and the Table Round," Boston, 1897) are probably the best known. Besides these he published, in 1881, a metrical translation of the "Ædipus Tyrannus," and in 1900 a translation, also in verse, of "Sonnets and Madrigals of Michelangelo Buonarroti." A little volume of original poems, written at various times and privately printed in 1904, in a small edition under the title "Words for Music," gives happy expression to his finely sensitive nature.

Mr. Newell's interests began early to be concentrated upon folk-lore in its various branches. In 1883 he published an admirable volume on the "Games and Songs of American Children." In 1888 he took a leading part in the organization of the American Folk-Lore Society, of which he was the Permanent Secretary until 1907. During the same years he was the editor of the *Journal of American Folk-Lore*, and from 1894 till 1906 of the "Memoirs" of the Society. To him more than to any one else has been due the promotion of the study of folk-lore in America, and few American scholars have had as extensive a knowledge of the subject. In his editorial supervision of the *Journal* he gave generous advice and assistance to contributors, and he wrote for it also numerous interesting articles of his own. He brought to his work a wide acquaintance with European



languages and literatures, and the kind of eager intellectual curiosity which alone stimulates accumulative scholarship on any large scale. But he never became a mere antiquarian, a simple collector of the curiosities of literature and custom. Just as he did not allow himself to be lost in the by-paths of popular literature, but remained to the end of his life the student and interpreter of some of the greater writers of the best periods, so he always sought to study the facts of folk-lore in their bearings on the history of literature, religion, and civilized institutions. Thus in his last years he devoted much time to the investigation of the origin and growth of the romances of King Arthur and the Holy Grail. His general theory on this subject was set forth in the introduction to his translations from Chrétien and elaborated in later articles in the *Journal of American Folk-Lore* and in the "Publications of the Modern Language Association." Its main contention, which goes far in denying to the Celts any essential part in a literary cycle that purports to have originated with them, seems unlikely to gain acceptance. But Mr. Newell's statement of the case was profitable and his investigation of some topics minute and thorough; and in the course of his argument he contributed suggestions of importance to the bewildering discussion which bids fair to continue long concerning the "Matter of Britain."

*F. N. Robinson.*

MEMORIAL MEETING AT THE FIRST CHURCH,  
CAMBRIDGE, MASS., MARCH 10, 1907.

ON Sunday afternoon, March 10, 1907, at 4 o'clock, a meeting in memory of William Wells Newell was held in the First (Unitarian) Church, of which his father was for many years the minister, and of which he was himself a member. The meeting was well attended, many men of science and letters being present. The minister of the church, Rev. S. M. Crothers, presided and spoke a few words of appreciation and sympathy. The principal addresses were made by Colonel T. W. Higginson (for the Authors Club of Boston), Professor Franz Boas of Columbia University, New York (for the American Anthropological Association), Professor C. H. Toy of Harvard University (for the Study of Religions Club). Mr. Higginson read a letter from Rev. Edward Everett Hale telling of the good thoughts and deeds of Mr. Newell, whose loss to philanthropy and kindred activities he never ceased to deplore. Professor R. B. Dixon of Harvard University read a letter from Professor F. W. Putnam, whose state of health prevented his attendance. Professor Putnam paid tribute to Mr. Newell's enthusiasm and zealous labors in connection with the founding and the work of the American Folk-Lore Society.

*Colonel Higginson* spoke first of Mr. Newell's ancestry in New England and Old England. His father was a Unitarian minister and for many years pastor of the First Church in Cambridge; his maternal grandfather was a schoolmaster of the good old type, one of the first educators, it appears, to bring Spanish boys from the South to be given the benefit of an English training. These associations counted for not a little in his character and achievements. He then told of his own associations with him in the Authors Club and elsewhere. Mr. Newell always had the literary instinct and the poetic spirit, and one almost wishes that he had devoted himself entirely to letters. But this could not be. In the Authors Club he took part not only in the literary exercises and discussions, where his great knowledge and wide reading were of such value, but was prominent in the social activities of the society, its outings, picnics, etc. He had the art of getting along with people, as well as the temperament and the equipment of the scholar. In his "Translations" and his little book "Words for Music" may be seen some of what he has accomplished in the way of literature.

The letter from *Rev. Edward Everett Hale* read by Colonel Higginson is as follows:—



WASHINGTON, March 3, 1907.

MY DEAR HIGGINSON, — I cannot be at the memorial service which will, I hope, leave some permanent record of our friend Will Newell.

If I had my way he would have survived me by twenty years, and I was sorry when I found I was never to talk with him again. When he left college in the midst of the way he was my assistant for some months, and never was a good fellow so devoted to the business of lifting up those who have fallen down as he. He was absolutely unselfish, I hated to lose him, but the country called and he left me for sanitary service. Here was the beginning, however, of warm personal attachment, which will always continue on both sides. He was very much beloved in Germantown, where he was minister for some time, and I have always heard that his school was admirable. Well it might be, for he was, as I suppose, a well-nigh perfect classical scholar.

I am such a Philistine that I have always begrudged to the Folk-Lore Society their capture of a man of such ability. But he has shown what is the value of enthusiasm in such work. If I had stood over him with a whip, — as the laws of the country do not permit, — I would have made him write more poetry. When the country choirs of America from Eastport to Tiajuana sing "*Adeste Fideles*" in English, they are, without knowing it, using the English words as he wrote them down.

Always truly yours,

(Signed) EDW. E. HALE.

*Professor Franz Boas* said: For many years I have had the good fortune to be closely associated with Mr. Newell in those lines of his work which relate to the study of folk-lore and anthropology, and to-day, in recalling the years of our friendship, the personal loss demands expression before we can give thought to what the sciences have lost to which he devoted his life and energies. His ready sympathy, his whole-souled devotion to his ideals, his simple and unhesitating acceptance of every call of duty, his inspiring enthusiasm, have been a constant help to his friends, a stimulus to wholesome activity.

Few are the men whose influence upon scientific thought is so closely connected with their personality as Mr. Newell's. He was not one of those who, in their enthusiasm for facts, are likely to forget the objects which the newly discovered data are to serve, and whose departure from the field of science comes to signify the loss of a powerful centre of activity, through whose agency many valuable treasures may have been acquired, but whose personality has disappeared behind the urgent demands of action. His was the power of directing the thoughts of students into the channels of his own mind,

by means of the influence of his personality and of his enthusiasm, and of increasing and directing their thirst for new information. What he achieved is not so much due to what he did, as to what he was.

Thus it has happened that Mr. Newell, although a man of literary inclinations, came to be a power in the field of anthropology. His first and most remarkable achievement, the foundation of the Folk-Lore Society, brought him into close contact, not only with the student of European folk-lore, of which field he himself was master, but also with the students of primitive tribes, and, without assuming to become an anthropologist, he exerted a lasting influence upon many investigators. Twenty years ago, when his interests were first turned in this direction, anthropology was almost exclusively in the hands of men originally trained in the study of the natural sciences, and this determined the standpoint from which the phenomena of anthropology were viewed. Exactness of description, on the one hand, the establishment of broad evolutionary principles on the other, were the guiding thoughts of students. The history of culture as a historical and truly psychological phenomenon was a thought that remained to be developed.

Mr. Newell's interests were aroused from entirely different points of view. His studies in the history of literature and folk-lore enabled him to perceive at a glance the historical elements in primitive culture, more particularly in the field of primitive lore and art, and to see that the gulf between the mental life of primitive man and civilized man, or between the mental life of races that many students had constructed, had no existence in reality. His own artistic temper which permitted him to feel with the poet, and his human sympathy which led him to follow up the gradual spread of artistic productions among the people, together with his fund of historic knowledge, enabled him to see things that had been hidden from the eyes of anthropologists.

To understand him aright we must also not forget the broad humanitarian basis of his scientific interests. If it had been only the knowledge of remarkable forms of beliefs of foreign races, he might have been an interested spectator, but he would hardly have thrown as much energy into the work of inspiring students with the necessity of saving the vanishing remains of such beliefs, and of recording what still exists in full vigor. The strongest appeal to his sympathies lay in the light shed upon the fundamental values of culture by a close study of beliefs, customs, tales, and arts of foreign races; in the ability given by this study of appreciating the strength and weaknesses of our own culture, and in its tendency to correct the overbearing self-sufficiency of modern civilization.

He never formulated his views in writing; but in animated discus-



sions the analogies between primitive lore and that of Europe, the need of applying the well-grounded principles developed in literary research, the necessity of viewing many expressions of primitive thought as the artistic or philosophic expression of popular ideas formulated by artists or thinkers of high rank, were with him an inexhaustible topic, and he impressed his views upon the listener by the force of the vivacity of his temperament, and of the enthusiastic reliance on the correctness of his principles.

Thus it came to pass that he set anthropologists thinking in new lines, that he added new recruits to our ranks, and that he pressed one after another of us into his service, and thus led in the work of making room in anthropology for a broad historical viewpoint.

Considering that he was not a professional teacher, nor a writer on anthropological subjects, in the narrower sense of the term, his success and his influence seem marvelous to him who did not know him. Such success is given only to him who by his own mental vigor overcomes all resistance, whose faith in his own work carries conviction.

It is left to us to see that his work may live; and our task has been made easy by him, for those ideas for which he stood have taken firm hold. May his memory help us to follow in his steps.

On behalf of the History of Religions Club *Professor C. H. Toy* said: "Mr. Newell was a member of the Club from its beginning in 1891, ever took great interest in it, rarely missing a meeting. He presented to the Club a number of papers on such points as the rôle of the sun-god among the North American Indians, and the survival of heathen customs and ideas in mediæval European Christianity; all that he wrote was carefully prepared and illustrated with learning and reflection. His wide reading and his grasp of the method of historical research enabled him also to take part in the discussion of other topics presented in the Club, even when the field was relatively remote from his own; it was rare that he was unable to produce parallels that threw light on the general subject. In discussion, while he ably maintained his own views, he was always ready to give respectful consideration to those of others. He entered with zest into the social side of the meetings; he was enthusiastic and hearty, uniformly cheerful, sometimes with what approached gayety, and he enjoyed fun, humor, and wit. It was absence of self-consciousness that lay at the bottom of his spirit of good fellowship. His attitude was impersonal, the opposite of self-regarding. He was one of the most unselfish of men, ever ready to give of his stores, disposed to efface himself, holding himself in a real sense to be the servant of men. The members of the Club will hold him, along with Allen,



# NATURAL HISTORY

VOLUME XXI

MAY-JUNE, 1921

NUMBER 3

## MY LIFE OF EXPLORATION

BY

CARL LUMHOLTZ

FOREWORD.—In the accompanying pages we have a unique contribution from a man who is a charming writer and above all a great explorer. This autobiographical sketch was prepared at the request of NATURAL HISTORY and with a deal of modest embarrassment on the part of the author. Its charm lies in that in the writing of it Dr. Lumholtz took the same objective, discriminating view that characterizes his travel narratives. Later explorers following in his footsteps have often testified enthusiastically to the skill and exactness of Dr. Lumholtz in hitting upon the outstanding features of each new environment encountered and his ability to convey these snapshots to the reader with few words. One thus gets the feel of the country from the printed pages. So when one reads the following narrative he obtains in retrospect characteristic glimpses of a career occupied above all with five major expeditions, each of which has added greatly to our knowledge of the remote corners of the earth. The collections and data from two of these great expeditions were deposited in the American Museum. It has often been said that one of the greatest gifts and the rarest is the genius for exploration; however that may be, there can be no doubt as to the genius of Dr. Lumholtz.—CLARK WISSLER.

AT school as a ten-year-old boy, I found the lessons about beasts and birds of the most absorbing interest. At that time not much attention was given to natural history in the schools of Norway and I was sorry after a short time to have to give up the study of animals for that of Latin and Greek. However, I later received some instruction in botany and learned how to collect plants, and during the last years of my school days I devoted almost every afternoon in the season to such collecting. In that way I made a fairly representative herbarium of the phanerogam flora of inland Norway, which some years later was presented to the Kew Gardens near London.

In taking my second degree at the University of Christiania I naturally chose the branches of natural science. I was particularly interested in zoölogy, which attracted me more than botany ever had. It was the desire of my father, who was a captain in the Norwegian army, to make a clergyman of me and, being of the old school, he did not see much value in the study of zoölogy. As theology did not appeal to me nor the

position of clergyman in a state church barring the attractiveness of the farm with which he is provided, and as under such circumstances I could not make up my mind what course to pursue, I accepted a position as teacher in a private family in the country and continued in that capacity for over a year and a half. Finally I decided to meet my father's wishes and study theology. The great naturalist, Michael Sars, father of the present Prof. G. O. Sars, of the University of Christiania, was a country parson at the time he made his startling discoveries of animal life in the deep fjords of Norway and at times I thought perhaps there might be a similar opening for me, through the gates of theology, to cultivate what was according to my inclination.

I took my degree in theology but it had already become perfectly clear to my mind that I should never be a clergyman. To secure my degree I had had to work sixteen hours a day for several months; this strain brought on a nervous breakdown, which, however, unexpectedly turned to my benefit. To regain the stability of my nerves I now de-



voted myself exclusively to the collecting of birds and animals and to a study of their modes of life. The specimens secured I sent to the zoölogical museum of the University of Christiania and I always felt happy when Professor R. Collett's letters of acceptance arrived with some remarks about the specimens sent.

In the summer I made tours, always alone, up to the mountains in the central part of Norway, and how wonderful it seemed to be in touch with nature again! Never shall I forget how beautiful some clumps of small mountain willows looked one early morning as I passed through them in the enchanting summer light of the northern countries. After a rainy night, newly formed pools reflected the brilliant sunlight in which the leaves of the willows fairly seemed to sparkle. There was enrapturing freshness in the landscape, which was high above the usual abode of man. The beauty of nature took hold of me and I felt my freedom from the confinements of metaphysics and scholasticism. I was overcome by emotion and wept from joy.

The winter was no obstacle to my enthusiasm for zoölogy. The skis, in themselves a wonderful stimulant to a love of nature, carried me far away into the hills and ranges surrounding Lillehammer, my native town in central Norway, famous for the natural beauty of its environment.

Love of nature took stronger and stronger hold of me and one day it occurred to me what a misfortune it would be to die without having seen the whole earth. I could hardly endure the thought which haunted me. There seemed very small prospect of my being able to realize my ambition because we were a large family and, although we were all very well brought up, my father had no fortune to speak of.

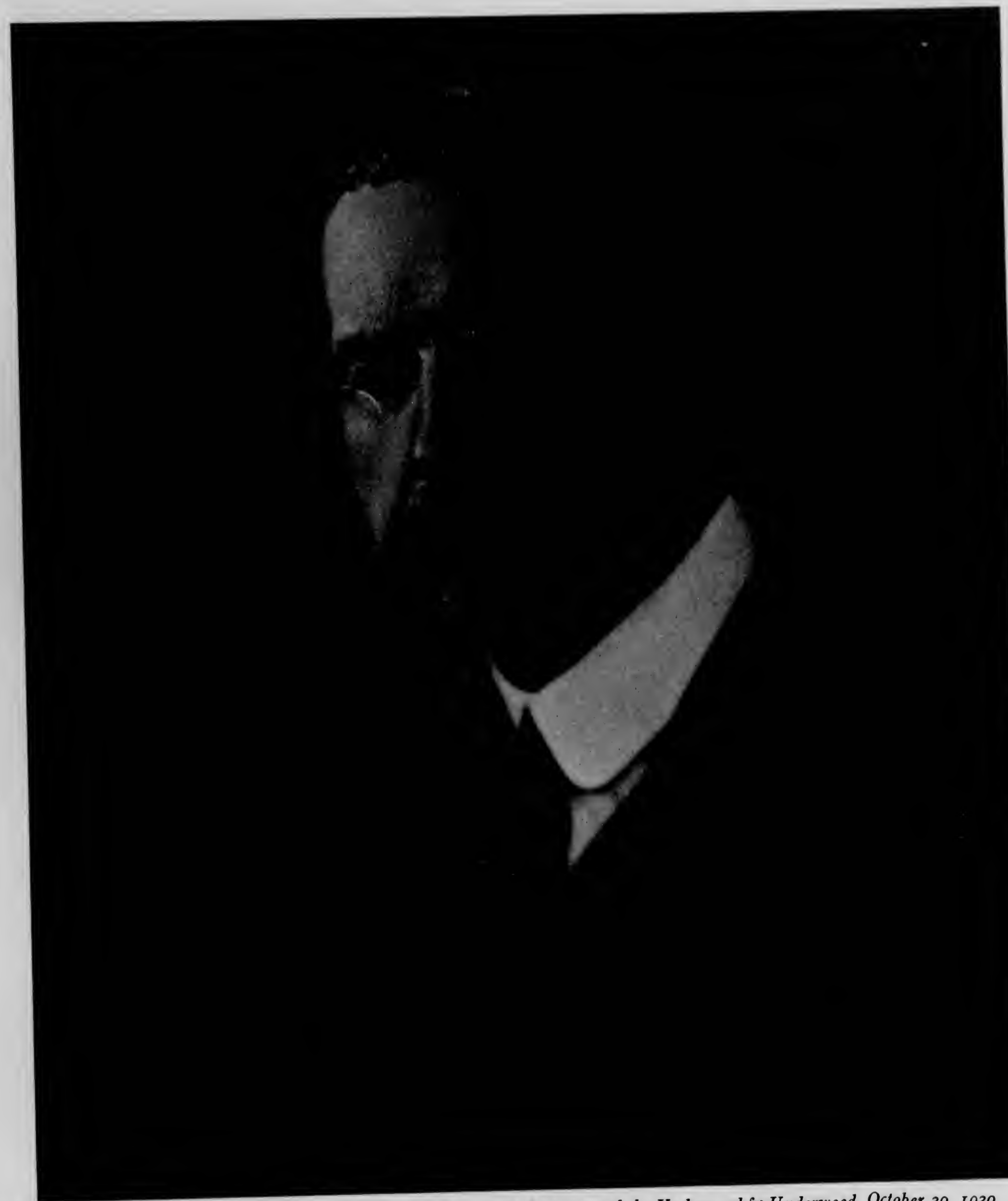
One day, however, Prof. R. Collett proposed to me that I should go to Australia to collect animals and birds for the zoölogical museum of the university.

I was elated at this suggestion. It was arranged also that the various museums of the university make contributions toward the expenses of my proposed expedition. One of the best Norwegian sailing vessels, bound for South Australia with a lumber cargo, took me aboard as a guest, and after a hundred days of sailing we came to Adelaide. From here in due time I arrived at Gracemere, a cattle station near Rockhampton, Queensland, where the owners, Messrs. Archer, who were Norwegians of Scottish descent, had invited me to make my headquarters as long as I liked.

After I had collected at this station for a few months, an opportunity came to accompany a wagon driver who was going to take provisions four hundred miles inland to Minnie Downs Station, which my friends also owned, on the Barcoo River. Here I spent some time collecting. Not far from the house, in the dry creek, a certain fossil shell was found in abundance; it was a gigantic *Inoceramus* from the Cretaceous period and turned out to be a new species (*giganteous*).

Riding one horse and leading my pack horse I continued my journey alone westward to the Diamantina River, usually staying for a night at some sheep or cattle station, where hospitality is always extended to the traveler. I had a burning desire to continue the trip right to the Gulf of Carpentaria, but on the Diamantina River I contracted disagreeable wounds on the lower part of my legs, the result of bites inflicted by fleas living on the ground. This infection troubled me for several weeks, affecting my whole body, and finally obliged me to return to the coast.

Mr. Walter J. Scott, a great "squatter" whom I met in Brisbane, had been kind enough to invite me to stay at Herbert Vale, an abandoned cattle station which he owned on the Herbert River in Northeast Queensland, about 18 degrees south latitude. He had moved his station up to the highland



Copyrighted photograph by Underwood & Underwood, October 20, 1920

To my friend  
President Henry Fairfield Osborn  
from  
Carl Linnholtz



about a hundred miles westward, but good buildings had been erected at the original place and he had left an old man in charge. Here I might make my headquarters as long as I desired. It was a very tempting offer and, as soon as circumstances permitted, I found myself at the deserted cattle station on the Herbert River.

I at once sought the natives, who were prowling about in the neighborhood and who would come to the station every time we killed a bullock in order to secure the offal. These were so-called "civilized" blacks, that is to say, they had picked up a few words of English and had learned to smoke tobacco, of which these aborigines are inordinately fond; they were ambitious to secure such ornaments as a cast-off shirt or, better still, a hat,—to their mind the principal distinction between a white man and a black. These savages, with very few exceptions absolutely nude, who seemed to fit so well with their surroundings, at once attracted me, and on my daily excursions into the neighborhood, proved to be good companions.

The coast range not far away, at an elevation of four thousand feet, seemed always to beckon to me so invitingly; there ought to be rare, probably new, species of animal life in the dense jungle of that lonely range. But how to get there when the blacks of that region were reputed to be "bad"? After a while I decided on a bold undertaking, to camp and travel with these aborigines alone. I felt that surely they would help me to find animals hitherto unknown to science. As far as I know, no white man has ever attempted to camp alone with the wild natives of Australia; the first warning the colonists give you is, "Never have a black fellow behind you." My daring was, however, richly rewarded by the finding of new species of mammals, by the insight gained into the life of primitive man, and by the intense interest derived from real touch with nature.



*Courtesy of Charles Scribner's Sons.*

Native Australians from Northeast Queensland with their characteristic wooden clubs and shield. A wooden sword is on the ground

This sojourn for the better part of a year in the coast range near Herbert River became, in fact, the opening chapter of my life as an explorer. Thus far I had been a zoölogist. My life, however, among the blacks of Northeast Queensland awakened my interest in primitive man, and since then native races have been my life study.

From my headquarters I usually took along a dozen or more pieces of mildly salted and dried beef, some flour, and a small quantity of sugar, but as these provisions were quickly consumed because I was obliged to share them with my men, who were very fond of them, I also secured from my men the food that the natives use. There is a vine growing in that jungle that has a comparatively large root, which is excellent eating when roasted, but unfortunately it is rather rare. As for the rest of the vegetables that the blacks in those parts of the country use, they are very unattractive. Some of them in their natural state are actually poisonous, and have to undergo a process of heating and soaking in water before they may be eaten.





An Australian black fellow climbing a gum tree by the aid of a vine cut from the jungle. With the left hand he holds on to a notch in the vine and, after looping the tree with the free end, winds that end around his right arm. By flipping upward his rope-like support, he skillfully ascends.

In respect to meat I was somewhat better off. The large lizards should not be despised, but the flesh of snakes was dry and practically unfit as food, though the liver is as pleasing to the taste as that of chicken. I often ate the animals and birds I skinned, but most of them were unpalatable. The meat of the tree kangaroo (*Dendrolagus lumholtzii*), which I had the pleasure of discovering, was, however, really attractive in taste, reminding one of game; this is very far from being the case with the meat of the ordinary kangaroo or of the wallaby. My favorite dish was the larva, eaten toasted, of a large brown beetle; the larva is found in decaying acacia trees. Contrary to what one expects the Australian native cooks his food well, and if there is the slightest indication of the meat smelling, he throws it away. He does not know the use of salt.

The curious "incubating" habit of the "brush turkey" (*alegalla*), which deposits its eggs in large mounds, there to be hatched by themselves, now and then offered us a chance of sitting down to a really good meal, for the eggs are large and very tasty. From the natives I learned the use of honey, which since then never has been missing on any of my expeditions. It makes a wholesome and pleasant drink and is rich in vitamins.

Every evening the blacks at my request made a hut of branches, which was rather low but long enough to enable me to stretch out at full length, an opportunity for relaxation which the natives are never particular about. If it looked like fine weather, my men did not even trouble to make any hut for themselves. Their one preparation for a comfortable rest was, by the aid of a stick and their fingers, to make a hole in the ground big enough to fit the hip. To keep warm in the night three or four would sometimes huddle together, absolutely nude and without any cover whatsoever.

A very important part of my outfit was tobacco, which served me instead

of money; for tobacco they would do anything. In Australia the "weed" imported from America could be purchased as plates of the strong "nigger-head" variety and, when about to be used, was broken up in sticks of the size of a finger. Clay pipes were also taken along, for the tobacco is never chewed by these natives. They were well satisfied with a small bit but had to be paid for any services, however trivial, that they did.

Next to tobacco my gun exercised great powers over them though I always had to bear in mind that missing my aim even once would mean a dangerous reaction in their estimate of the white man's superiority. During the latter part of my stay, whenever I found the behavior of my men less satisfactory, in the evening just before going to bed I would fire a shot from my revolver, which they called "the gun's baby" and for which they had a wholesome fear. It reminded them of my superiority. Not one word more was said. It was like my "good night" to them.

We naturally slept around the same fire, which at first they insisted upon making small in order that their enemies should not discover their whereabouts. It was a very fortunate circumstance for me that in the winter time when I began this camping life I used to feel cold at night in spite of the fact that I had brought along a blanket. I had to rouse my lazy black fellows and induce them to secure more wood for the fire. By being disturbed in this way they got it into their heads, as I later discovered, that the white man slept but little and always had the "baby" ready.

I had one friend among the savages, a young black fellow called Yokai, who took a singular interest in the white man, helped me to gather men for my expeditions, and evidenced a certain attachment to me. He loved tobacco and all the things I had seemed to interest him; nothing made him as happy as to be allowed to make *dampier*, the bread of

those who rough it in Australia, consisting of flour and water and cooked in the hot ashes. To him no doubt I owed my life, as he on one occasion said to me "it was no good killing the white man." He was remarkably naïve and often blurted out information about the other blacks which was of the greatest value to me. Nevertheless, I felt that if matters were brought to a crisis, I could not depend even upon him, for the Australian blacks are like big children. I never knew when he might be persuaded by his elders to allow them to kill me, which they most likely would have done by smashing my head with a stone during the night.

My little supply of tobacco, my shirts, and above all my white blanket were objects of envy to my men, and in consequence there was a constant temptation to kill their possessor. One reason why the blacks became very dangerous was that one of my own blacks had killed a lone white man who was attempting to reach the highland by walking. I exerted myself to have the murderer punished and the blacks all turned against me.

I always treated them justly and I did not feel called upon to shoot any of them; in fact, I have not as yet shot any man. My friend Yokai reproached me for being too kind. "You are not angry enough," he once said. "Shoot them, shoot plenty," he added.

There was nothing else to do but to return to civilization and I was truly glad when I arrived with all my collections at the sugar plantation on the lower part of the Herbert River. I had discovered, in addition to the tree kangaroo above mentioned, three other mammals. I was close on the track also of another animal, a large, carnivorous marsupial which the natives called *yarri*. This animal still awaits discovery. That it really exists I do not doubt, because in such matters the natives are to be depended upon.

The first three months of my camping



life with the natives of Australia are the most interesting, I might almost say fascinating, time I have had. I was then at the zenith of my power and it is, of course, pleasant to be the first, even among admiring savages. My whole sojourn, covering many months, with the men of the Stone Age was, however, an experience I am glad to have had.

The senses of the Australian blacks are superior to ours, their eyesight extraordinarily so. As he walks through the jungle, this savage man will constantly, without stopping, scoop up a handful of the soil and smell it, to ascertain whether some animal has passed that way or not. On the trunks of the trees there is always seen a bewildering number of claw marks left by different animals, for most of the animals of that region live in trees. He reads, as in an open book, what kind of animal ascended that tree the night before, and whether it is now up in the hollow of the trunk.

The most interesting scene I have witnessed during the many years spent with natives of different countries was the annual settlement of disputes, in use among the blacks of Herbert River. It is called *bórbobi* and is, in fact, dueling conducted on a large scale, several pairs fighting at the same time by throwing boomerangs and clubs, then spears, and ending by pounding each other with the heavy wooden swords used in North-east Queensland. Huge shields are used for protection. On the occasion I attended one man was mortally wounded by a spear which actually went through the shield and into his stomach.

After having written a book on Australia<sup>1</sup> I went to the United States to lecture on my unusual experience and also with the hope of being given an op-

<sup>1</sup>An account of my Australian travels of four years was published in several languages,—the English edition *Among Cannibals*, by John Murray, London, 1889, followed a little later by the American edition, under the imprint of Charles Scribner's Sons, New York. The French edition, *Au Pays des Cannibals*, was published by Hachette et Cie, Paris.

portunity to make researches among the primitive men of the American continent. My lectures created considerable interest and as early as the autumn of 1890 I was able to realize my project of exploring the northern part of the Sierra Madre, Mexico, conducting an expedition under the auspices of the American Museum of Natural History and the American Geographical Society. Professor W. Libbey of Princeton University joined the party and as we were about to enter a little-known region, I thought it advisable to take along a few collectors in the domain of natural history.

Starting from Bisbee, Arizona, in September, I entered Mexico through San Pedro, traveling in a southerly direction through Sonora and then turning eastward up into the Sierra Madre at Nacori. From here on to Casas Grandes in Chihuahua we had to make our own trail, which was done successfully in spite of the fact that it was winter and the size of my party considerable. With nearly a hundred animals—mules, donkeys, and horses—we crossed the Sierra Madre, at times camping in the snow. To this day our trail has remained the commercial road between the States of Sonora and Chihuahua.

Arriving at the Mormon colony, Pacheco, on the eastern slopes of the Sierra, we found some very interesting old cave dwellings to explore. Later on we settled on the lowlands of San Diego, where for many months excavations were made of several large mounds that covered house groups. We unearthed about five hundred pieces of beautiful pottery.

Among the fifty-five mammals secured on this first expedition to Mexico was a superb-looking red squirrel of the high Sierra, which received the name of *Sciurus apache*. Our botanical collectors, Messrs. C. V. Hartman and F. E. Lloyd, found themselves in a hitherto neglected field and their labors were rewarded with the finding of twenty-seven new



Courtesy of Charles Scribner's Sons

Although the majority of the Tarahumare Indians live in simple shelters, usually made of rough pine boards leaning against each other, they all love caves. Many families go to the caves for a change of domicile, others live in them permanently. In fact, these Indians may properly be called the cave dwellers of the America of today.

species of plants, some of them of much importance.

After an absence of some months in the United States I returned toward the end of the year to my camp at San Diego, and in January, 1892, with a much reduced force began my second expedition to Mexico, ascending again the Sierra Madre and following it southward.

At Tutuhuaca we met with a new species of pine (*Pinus lumholtzii*), which is very ornate on account of its slender, whiplike branches and its long, hanging needles. Later we often saw it growing in groups at high altitudes on decomposed volcanic tuff.

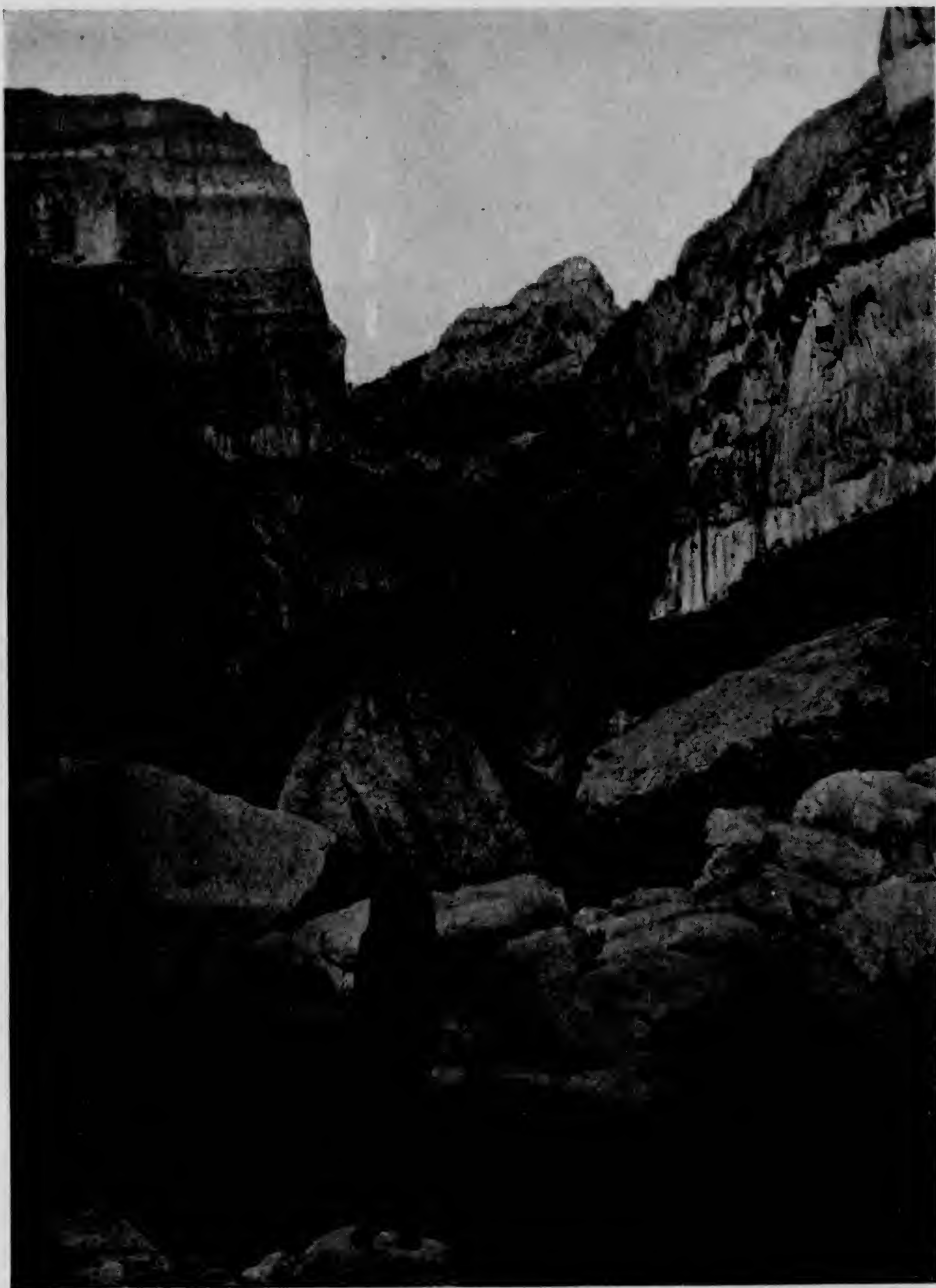
For one and one-half years I traveled in the extensive and picturesque country of the Tarahumare Indians, the great tribe of the State of Chihuahua. In order to save expense and to concentrate my efforts on ethnological research in the interesting region in which we found ourselves, I dispensed after a few months with my assistants, Mr. C. H. Taylor, civil engineer and photographer, and Mr. A. E. Meade, mineralogist. Mr. Hartman remained a few months longer as assistant in ethnology. Finally, how-

ever, I conducted my investigations alone, following the wild (so-called *gentiles*) Indians into the distant retreats in the deep cañons for which the States of Chihuahua and Durango are famous.

The Tarahumares are timid, honest, and bashful people, their habits and customs often being singularly interesting. Their dances, a kind of religious exercise, have been minutely described by me. A dancing place is found near all dwellings and on it is raised a small wooden cross to which to dance, and which represents a man with arms outstretched, Father Sun, the perfect man.

By selling most of my animals and a large part of my outfit and through the untiring efforts of two American ladies whose friendship I highly esteemed, I was enabled to continue these researches until August, 1893, when I took my Tarahumare and Tepehuane collections to Chicago and exhibited them at the World's Fair. Extensive vocabularies of the Tarahumare and Tepehuane languages as well as a vocabulary of the now almost extinct Tubares were among the results of this expedition, besides





*Courtesy of Charles Scribner's Sons*

#### BARRANCA DE SAN CARLOS IN CHIHUAHUA

It may be compared with the Grand Cañon of the Colorado so far as depth is concerned, and the sides are steeper, but the latter excels in extensive and picturesque views. The present picture, showing one of the author's carriers, a Tarahumare Indian, in the foreground, was taken in the upper part of the cañon, which is not as deep as the lower part

anthropological measurements, samples of hair, and osseous remains.

The great possibilities Mexico offers to ethnology proved an irresistible incentive to new researches, and seeing the results of my previous expeditions, the American Museum of Natural History of New York again sent me out on what was to be my third and most extensive Mexican expedition, lasting from March, 1894 to March, 1897. During these three years I again traveled alone, that is, without any scientific assistants. I had with me at first two or three Mexicans; soon, however, I found that my best companions were the so-called civilized Indians, or even Indians in their aboriginal state, who not only helped me by their mere presence to win the confidence of their tribesmen but also served me as subjects of observation. As before, I stopped for months with a tribe, discharging all alien attendants, and roughing it with the Indians. In this way I spent ten months among the Coras and Huichols. At first the natives persistently opposed

me; for Indians are very distrustful of the white man, and no wonder, since he has left them little enough and they are therefore forced to guard that little the more vigilantly. I managed, however, to make my entry into their midst and gradually to gain their confidence and friendship, mainly through my ability to sing their native songs and by always treating them justly.

All along my route I gathered highly valuable material from the Tarahumares, the Northern and the Southern Tepehuanes, the Coras, the Huichols, and the Tepecanos,—all of which tribes except the last-named dwell within the Sierra Madre del Norte; also from the Nahuas on the western slopes of the Sierra, as well as from those in the States of Jalisco and Mexico; and, finally, from the Tarascos in the State of Michoacan. Of most of these tribes little more than their name was known, and I brought back large collections illustrating their ethnical and anthropological status, besides extensive information in regard to their



Huichols of the author's party crossing a swollen torrent on a bridge of their own construction





HUICHOL BOY

Raising maize and hunting the deer, as well as frequent participation in religious ceremonies, occupy the time of youths as well as men among this mountain people

customs, religion, traditions, and myths. I also completed my collection of vocabularies and aboriginal melodies.

Especially fruitful in results was my stay with the Huichol Indians. These Indians had been known mainly to a small number of Mexican half-breed traders and I was the first white man to visit them. The country was difficult of access and Mezquitic, the little town from which the tribe is reached, is distant three or four days' journey on muleback. The isolation of these Indians on a tall spur of the Sierra Madre had been their salvation and I found them living practically in the same state of culture as when Cortez put foot on American soil.

They had their temples and sacred caves, which were filled with symbolical objects of singular interest, thus throwing light not only on the cultural status of a barbarous tribe but even on that of their far more advanced kinsmen, the Aztecs. When my friend, that great ethnological genius, the late Frank Hamilton Cushing, saw the exhibition of my Huichol collection at the American Museum of Natural History, he exclaimed, as he let his eyes pass over the richly laden tables of the room: "This is like seeing a new species of man."

Of the ethnological results gained during my travels in Mexico I consider the information which was collected about the anciently well-known *peyote* (*lophophora*) among the most important. It is a well established fact that this little cactus when partaken of exhilarates the human system, allays all feeling of hunger and thirst, and produces color visions. In the Huichol tribe this highly interesting plant cult reached its greatest development. The Tarahumares also worship this plant.

In order to collect *hikuli*, as the cactus is called, a pilgrimage lasting forty-three days is annually undertaken into the State of San Luis Potosi.

Of late years the *hikuli* cult has, strangely enough, been adopted by



Courtesy of Charles Scribner's Sons

A flower (*Enothera trichocalyx*) of the desert. It usually makes its appearance along the courses of the dried-up creeks

certain tribes in the United States and well meaning people are trying to stop this on the ground that it is a kind of debauchery. Nothing could be farther from the truth. By all manner of means prevent the Indians from getting the white man's brandy, which ultimately and surely ruins them, but *hikuli*, or *peyote*, is an entirely different matter.

As far as my experience goes, the partaking of *peyote* is not injurious to health; besides, the cult is observed only during a limited season of the year. The effect of the plant on the nervous system is very different from that of alcohol; the balance of the body is even better than





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Of late years the *hikuli* cult has, strangely enough, been adopted by



Courtesy of Charles Scribner's Sons

A flower (*Eriogonum fasciculatum*) of the desert. It usually makes its appearance along the courses of the dried-up creeks

certain tribes in the United States and well meaning people are trying to stop this on the ground that it is a kind of debauchery. Nothing could be farther from the truth. By all manner of means prevent the Indians from getting the white man's brandy, which ultimately and surely ruins them, but *hikuli*, or *peyote*, is an entirely different matter.

As far as my experience goes, the partaking of *peyote* is not injurious to health; besides, the cult is observed only during a limited season of the year. The effect of the plant on the nervous system is very different from that of alcohol; the balance of the body is even better than





The author's pack train wending its way through the Sonora desert. The sand dunes owe their graceful outlines to the shaping force of the winds

under normal conditions. There is nothing vicious about the *hikuli* cult. Abstinence from sexual intercourse is imposed on its devotees and a marked effect of the plant is temporarily to take away all sexual desire.

On my journey through the Tierra Caliente of the Territory of Tepic, and the States of Jalisco and Michoacan, I obtained a number of archæological objects of great historical value and importance. Among the antiquities secured may be mentioned a beautiful jar in the shape of a turkey, strikingly ornamented with thin gold plates. Furthermore, a number of large terra cotta figures were found in a subterranean chamber near Iztlan representing ancient Tarascan culture. About three hundred skulls of Mexican Indians were collected in the course of my first expeditions to the republic. These were all described years ago in a scholarly work by Dr. A. Hrdlicka. The publication of this important work has thus far been impossible through lack of funds but it is to be hoped that such funds may be provided for the purpose in a not distant future.

In 1898, accompanied by Dr. Hrdlicka, I revisited the Tarahumares and the

Huichols. In 1905, I alone visited the Huichol and Tepecano Indians. My observations of the latter tribe have not yet been published.

In 1909-10 I made my last expedition to Mexico, traveling in the Sonora Desert and the southern part of Arizona, a fascinating country in spite of the arid conditions prevailing there. The wonderful colors of the late afternoon, the glorious sunshine, the peace and calm of night, and the thrills that accompany early dawn are sources of constant delight to the traveler. The extraordinary adaptations of plant and animal life, even the domestic animals of Indians and Mexicans subsisting without difficulty for months without water, cannot fail to interest the observer. With the exception of the Seri and the Pima Indians, the natives of the desert had so far received little attention from those engaged in the study of primitive races. The Papago are the great desert people of America and are remarkably stable in their racial characteristics, still preserving the traditions and habits of the past, which soon will disappear.

I was fortunate in being able to describe their harvest festival and in other ways to give an insight into their



A drinking pool in the Sonora desert. In the cavernous depressions, known as *tinajas*, of the lava formations, water is also obtained

tribal life. It is well authenticated that the tribe knows a cure for hydrophobia and, in order that the secret shall not die with the tribe, I may take this occasion to state that the main ingredients of the medicine are certain excrescences, of wonderful antiseptic quality, found on the greasewood (*Covillea tridentata*), the humble but very attractive bush of the desert.

My researches in Mexico and the Southwest, extending from Casa Grande, Arizona, down to west of the City of Mexico, thus covered a period of nearly eight years, six and a half of which were spent among the Indians of those regions.<sup>1</sup>

Ever since my adventurous life among the blacks of Northeast Queensland it had been my desire to explore New Guinea, the largest island on the globe,

<sup>1</sup>My publications on Mexico are, besides minor articles:

*Unknown Mexico*, in 2 vols, illustrated, Charles Scribner's Sons, New York, 1902.

*New Trails in Mexico*, illustrated, Charles Scribner's Sons, New York, 1912.

*Symbolism of the Huichol Indians*, Memoirs of the American Museum of Natural History, 1900.

*Decorative Art of the Huichol Indians*, Memoirs of the American Museum of Natural History, 1904.

and among the least known regions thereof. In 1914 it really seemed that I was on the point of realizing the dream of my youth. I found myself in Batavia, Java, about ready for the start eastward to New Guinea. It was a Norwegian Expedition, which had the support of their Majesties, the King and the Queen of Norway; the Norwegian Geographical Society, the Royal Geographical Society of London, and the Royal Netherlands Geographical Society, each made a contribution to my funds, which, besides, were increased by American and English friends. With the outbreak of the great war, however, my plans suddenly had to be changed. His Excellency, the Governor General of the Dutch Indies, Mr. A. W. F. Idenburg, regretted his inability to give me a military escort and other assistance for carrying out my plans, and advised me to await a more favorable opportunity. As I had never been in British India, I decided to go there while awaiting developments. In India I studied Hindu religions, a fascinating occupation, but after eight months spent there I decided to return to the Dutch Indies and undertake an expedition to Central Borneo, parts of which are unexplored and un-





The floor of the desert sometimes rivals the "ribbed sea sand" in its minute sculpturing. Such wavy lines owe their origin to the action of the wind. The scene is of the desert northwest of Pozo del Caballo, Sonora

*Courtesy of Charles Scribner's Sons*

known to the outside world. The Governor General with the greatest courtesy assisted me in furthering my project, and gave me a small escort of six Javanese soldiers under the command of a Dutch lieutenant. An excellent native surveyor was attached to the expedition and for part of the time one of the government's photographers.

The journey through central Borneo, which consumed nine months, was successfully made. There are no roads in Borneo, all communications being by water, the large rivers enabling the traveler to ascend far inland. Numerous rapids, often very difficult to conquer, have to be passed. In the central part of the great island, the absence of life—in other parts abundant—was very striking. The only birds that you might hear or see were the great hornbill, the sandpiper, and a kind of kingfisher. No more fish were caught in the rivers; there were not even mosquitoes, hence there is no malaria in the interior. As for human beings, large tracts of the inland country are uninhabited.

There was no change, however, in the exuberant richness of the tropical vegetation. As we ascended the Upper Busang River, the scenery was often beautiful beyond words; silence reigned supreme. It was like having a pleasant dream.

I extended my travels to other parts of the great island and thus spent the better part of two years among its very interesting natives. They form many different tribes, which, however, present many similarities and are therefore included under the general name of Dayaks. Some of the tribes I met with had never been studied before. I may, perhaps, not be accused of being immodest in claiming the credit for having been able to put the head hunters of Borneo in the right light before the civilized world.

My researches prove that this very repulsive and extraordinary custom of taking heads is not due to particular viciousness on the part of those who practise it, but has its foundation in their vivid realization of a life after this; in fact, to the Dayaks, as to many Oriental people, there is no essential difference between this life and the next.

At the very moment that a Dayak cuts off the head of a man belonging to another tribe, his soul conquers that of the departed, who becomes his slave. If that head, or in other words the soul residing in it, is treated well, it becomes a friend and guardian of the tribe. Such a head protects against the evil spirits and even insures material benefit. This is in a few words the idea underlying head hunting.



A medicine man of the Huichols beating his deer-skin-covered drum. The drum plays an important part in many of the ceremonies of this people. The curious easy-chair in which he is seated is of native manufacture and is reserved for the important members of the tribe, such as temple officials and medicine men

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An important medicine man of the Huichols and his wife. Girdles and pouches like those worn by the man are woven by the women, the designs often being astonishingly artistic. The pouches are for ornament, not for use. The object on the head of the man is not a cap but a woven ribbon used for binding the hair





Farther up the river men of the Kenyah tribe of Borneo have been beating the roots of the *tuba* vine to free the poisonous juices therein contained. These juices, mingling with the waters, stupefy the fish and thus make possible their capture. In the picture women of the tribe are seen with hand nets held in readiness to scoop up the fish that are being carried along helpless in the current



Sections of bamboo stalks are used as containers for rice or for pork, important items in the diet of the Dayaks. A little water is added but no salt. As long as the stalks are green, they resist burning. Rice cooked in this way has a sweet, delicious flavor



The long-nosed monkey (*nasalis larvatus*) is peculiar to Borneo. These creatures are sometimes found in groups of a hundred or more travelling through the forest by swinging from branch to branch

These "wild men of Borneo" neither tell lies nor steal. To appropriate the property of another is a thing they take good care not to do, for a thief in the next life will be seen carrying around on his back all the stolen goods, thus exposing himself to ridicule and contempt. The Dayaks are hospitable, generous, and loyal. During the two years I traveled among them I never once observed children quarreling or fighting.

The results of my journey were very satisfactory. Vocabularies of many tribes were studied and collected; anthropometric measurements were taken and much new information gathered about the habits and customs of the natives. I brought back material for several treatises, especially in regard to the decorative art of the Dayaks and also concerning a much developed protective system which certain tribes possess in carved wooden figures called *kapatongs*.

Skins of mammals and birds were secured, as well as specimens of fishes and reptiles in alcohol. So far only the mammals have been examined; these yielded one new species and two new subspecies.

It is a curious fact that both among the Chinese and the Malays individuals

are met with who are thoroughly convinced of the existence of brown men with short tails. Many will tell you that they themselves have seen them. I was able to collect from the Dayaks the legend of the tailed men, which may be found in my book on Borneo.<sup>1</sup>

The Great Archipelago in which I found such a remunerative field for my efforts appeals to me more than any other part of the earth which I have visited. In its humid and warm climate I thrived, feeling, in fact, better there than here. The great possibilities of discovery in those distant islands fascinate me now as they did when I



Courtesy of Charles Scribner's Sons

The Manx cat is not the only one with a rudimentary tail. In Borneo there is a domestic feline that is either stub-tailed or with a ball at the end of its exceptionally short caudal appendage

was in Australia. I have decided to devote the rest of my life to science, to visit little known or unknown parts of the earth with the hope of increasing our knowledge from a geographical and anthropological point

<sup>1</sup>An account of my exploration of Borneo is given in *Through Central Borneo—Two Years' Travel in the Land of the Head Hunters*, Charles Scribner's Sons, New York, 1920.





From a cinematograph showing a Penyahbong of Central Borneo gracefully executing a war dance practised by many Dayak tribes. Before seizing his sword and shield and indulging in the more violent movements of the dance, he went through the preliminary of exercising all his flexible muscles. His motions were lithe as those of a serpent

of view and also with the expectation of making further contributions in the field of natural history.

I am more than ever interested in carrying out my New Guinea project, which was so unexpectedly thwarted by the outbreak of the war. No country offers such rewards to the intrepid explorer as New Guinea, the largest island on the globe, lying just to the north of Australia with which it was once connected.

In 1920 I went abroad in the hope of securing in Norway the necessary funds for this the greatest of all my undertakings. If I had come one year earlier, I should have gotten all the money needed, and more, my friends assured me, but the great financial depression which had then begun to manifest itself in Norway made it impossible to secure more than a small part of what was needed. It must be said that my countrymen did all that they could to further my purpose in which they are intensely interested, but "*Ultra posse nemo obligatur.*"

I am now trying to get the necessary support in the United States for an enterprise that cannot fail to give the valuable results desired and which may prove of direct benefit to civilization by the discoveries I expect to make. This is not the place for a detailed account of my plans, which I shall always be most happy to furnish to anyone interested in the matter, but may I not be allowed in a few words to state the object of my proposed expedition?

I intend to cross New Guinea from south to north at its broadest point, having chosen a route where no white man has ever been before me. We shall have to cross at an elevation of 10,000 feet the great Snowy Range, whose highest measured peak is 18,000 feet. From the time when I shall have established my headquarters at the foot of the range until I am able to emerge on the north coast of the island, one year will have elapsed. The backbone of



The artistic ability of the Dayaks expresses itself in carving rather than in music. Nevertheless, they have musical instruments, the chief of which is here represented. Its notes are rather pleasant

my expedition will be 175 Dayaks, who will be brought to New Guinea from Borneo. They are to be our carriers, builders of boats and of houses. I shall have two taxidermists and a botanical collector; an experienced geologist, whom I hope to secure in the United States, will be an important member, for this great island is of particular interest to geology, which here will find the solution of many of its most important problems.

For many years I have studied the food question, and there need be no fear that beri beri or kindred diseases will attack the expedition.

Among people who know, it is the universal verdict that no region offers such inducements for exploration as New Guinea. We expect to meet natives

that have never seen a white man. Whenever a collector has gone up a hitherto unvisited river in New Guinea, he has invariably brought back new species of birds of paradise, and without any doubt we, too, will discover new species of these most gorgeous creatures. We are confident, too, of coming upon new species of mammals, some, maybe, of considerable size. Superb butterflies and interesting land shells may be expected. Botany will naturally gain much that is novel. In geology, specially valuable results may be anticipated, and we are likely to find new minerals.

Thus we may hope to make a valuable contribution to the history of the earth, as well as to our present knowledge of the mineral, plant, and animal kingdoms. Some of our discoveries may even prove of great economic value.



A tame horn-bill that often came to roost on the author's tent. The Dayaks refrained from laughter, no matter how ridiculous were the antics of this bird, for they hold the belief that those who laugh at animals will be stricken with illness





From a cinematograph showing a Penyahbong of Central Borneo gracefully executing a war dance practised by many Dayak tribes. Before seizing his sword and shield and indulging in the more violent movements of the dance, he went through the preliminary of exercising all his flexible muscles. His motions were lithe as those of a serpent

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Retake of Preceding Frame



Smithsonian Rept. for 1895-1896. 1898.

## MEMORIAL OF DR. JOSEPH M. TONER.

By AINSWORTH R. SPOFFORD.

Among the many familiar faces which we have been wont to see gathered in the scientific, literary, and professional assemblies of Washington, there has been no more striking or familiar presence than that of Dr. Joseph M. Toner. Cast physically in a frame of ample mold, with broad, full features, and a massive bald head, his mobile countenance ever ready to relax into a smile, he was a man of marked and engaging and impressive personality.

In attempting to summarize, however briefly and imperfectly, some estimate of our late associate, of his mental characteristics, and of the work which he has done in the world, we may view him in various aspects. We may consider him, first of all, as a student and investigator. He had from very early years a notable zeal for knowledge, and this, unlike the experience of many men who become absorbed in professional routine, may be said to have grown with him through life. Born in 1825 of good old Pennsylvania farmer's stock, the slender intellectual advantages of his boyhood were supplemented by a course of one year at the Western Pennsylvania University and two years at St. Mary's College, in Maryland. Choosing the medical profession for a career, he spent two years at two medical colleges, one in Vermont and the other, Jefferson Medical College, at Philadelphia, taking his degree of doctor of medicine from each. These studious years gave him a considerable knowledge of medical and hygienic literature, and after a brief residence at Harpers Ferry in the practice of his profession, he removed to Washington for a wider field in the year 1855. Here he at once entered upon a practice which became extensive in a very few years. But his habits of mind gave him so strong a bent toward scientific, historical, and literary pursuits that he almost wholly relinquished the active practice of his profession during the later years of his life, prescribing only for the families of a few friends.

Dr. Toner had some admirable qualities in matters of research. His perceptive faculties were quick, his grasp of principles firm, and his devotion to truth was paramount. He weighed evidence and authorities with care, and was often known to change his judgment formed on first impressions upon maturer investigation. At the same time, he



had that strong tendency to build up theories which is common to fertile minds, and had to abandon many which experience and observation failed to substantiate. Perhaps the leading characteristic of his pursuit of scientific subjects was assiduity rather than originality. He pursued every subject which interested him, especially in later years, with an energy which sought out all the means of elucidation within his reach, and he was not satisfied until he had seen and weighed whatever there might be in books and periodicals upon the topic in hand.

We may view him next as a writer, and his contributions to the press were neither few nor small. His first little book, "Maternal Instinct," printed in 1864, at Baltimore, was a serious discussion of the functions and the duties of motherhood, and evinced his earnest bent toward practical views of life. His second book, a "Dictionary of Elevations and Climatic Register of the United States," published at Washington in 1874, was more important. It was the first attempt, so far as known, to put before the public in book form and in alphabetical order the heights above sea level of all cities, towns, and mountains which could be ascertained. These were scattered through very numerous sources of information, in periodicals, Government reports, etc., and to gather them together involved protracted and patient labor, for which Dr. Toner's assiduous zeal in pursuit of a cherished object well qualified him. The book, as published, is open to the drawback that the reader has to consult two alphabets instead of one, and this was caused by the material growing upon him after he had printed off a large portion of the work, which forms the first alphabet. This may be regarded as an object lesson to authors and compilers not to be too hasty in going to press, observing the Horatian rule of a nine years' incubation rather than to bring out an immature production, ever mindful of the Roman maxim, "Litera scripta manet." Still, it is most creditable to the subject of our notice to have been the pioneer in a field of scientific research which has had many more recent publications, under the auspices of various bureaus of the Government connected with military, geological, and geodetic surveys.

In the field of medical and hygienic literature Dr. Toner published, in 1874, "Contributions to the Annals of Medical Progress and Medical Education in the United States," which was brought out by the Bureau of Education. Shortly after appeared his "Address before the Rocky Mountain Medical Association," afterwards expanded into a volume (Washington, 1877), and abounding in historical and biographical material concerning early American physicians and surgeons. He very early made it a special object to collect from the most widely scattered sources all the information existing relating to the men of his profession during the period of the American Revolution. It was this pursuit, occupying several years' labor, which first gave him that strong bent toward historical, and especially biographical, investigations, which finally absorbed nearly all of his time and energies. To gather this

material he went laboriously through the nine folio volumes of Force's American Archives, all the histories of the Revolutionary period, military journals, and personal memoirs, and medical and periodical publications without number. The result was seen in his volume entitled "The Medical Men of the Revolution," containing sketches of the lives and services of nearly twelve hundred physicians and surgeons, an invaluable compilation, which is highly regarded by the profession. He also wrote a "Necrology of the Physicians of the Late War," and "Statistics of the Public Health Associations of the United States."

Dr. Toner at one time made a special study of epidemics, collecting every book and pamphlet on which he could lay hands, and he published the results of his studies in several pamphlets on cholera, small-pox, inoculation, vaccination, and yellow fever. One of his contributions to hygienic literature was "Free parks and camping grounds in summer for the children of the poor in large cities," a pamphlet twice printed, which urges in forcible style the merits of that charity which has organized the "fresh-air funds" in so many cities, and which constitutes one of the best and most useful forms of practical beneficence. One of his incidental contributions to history was "Notes on the burning of theaters and public halls," (1876), occasioned doubtless by the burning of the National Theater in this city. This publication embodies a long and melancholy chronicle of the conflagration of buildings devoted to public assemblies, so often fatal to human life, enforcing the lesson which is never learned, that the sole safety of the community lies in building public edifices fireproof in every part.

In the later years of his life the zeal and energy of Dr. Toner's active mind were largely concentrated upon one subject—the writings and the military and civil career of George Washington. To this he devoted money and time almost literally without stint. The fruits of his Washingtonian researches, which have been embodied in permanent form, comprise more than a dozen books and pamphlets, besides numerous articles in historical and literary magazines and in newspapers. Among the latter were "Wills of the American ancestors of George Washington," in the New England Genealogical Register (1891); "George Washington as an inventor and promoter of the useful arts," published in the memorial volume of the Centenary Celebration of the Patent System in the United States in 1891; "Washington's neighbors;" "The home of Washington;" "Excerpts from the account books of George Washington;" "Washington's youth and early career;" "Kith and kin of Washington," and "Some account of George Washington's library and manuscript records, and their dispersion from Mount Vernon," issued by the American Historical Association as a part of its annual papers for 1893. The latter furnishes the only systematic account ever published of the remarkable history of the Washington manuscripts, widely scattered as they are, and it is of permanent value. Besides his own contributions illustrative of the personal and public history of Washington, his char-



acter, habits, social and domestic relations, etc., Dr. Toner edited and published no less than five of Washington's original journals and other writings. These include Washington's "Rules of civility and decent behavior in company and conversation" (1888); "Journal of George Washington's journey over the mountains, beyond the Blue Ridge, in 1847-48" (1892); "The daily journal of Maj. George Washington on a tour from Virginia to the island of Barbadoes in 1751-2" (1892); "Journal of Col. George Washington, across the Alleghany Mountains in 1754" (1893), and "Diary of Colonel Washington for August, September, and October, 1774" (1893). All of these were accompanied by copious notes elucidating the text, describing the topography of the regions traversed by Washington in his various expeditions, identifying the various persons referred to in the narrative, and supplying references to books and authorities bearing upon any of the incidents involved. In some cases these notes far exceed the text in volume, and they are invaluable aids to the historical inquirer. In the case of the Barbadoes journal, Dr. Toner went through all the literature to be found relating to that island, giving lists of the settlers and describing the persons and places visited by the youthful Washington (then 20 years of age) so far as possible.

We may now consider the subject of our sketch as a collector of books and of historical material. The passion of collecting, so common among men of literary tastes and habits of research, but which is so seldom carried to the utilization of their stores by the collectors, was, in the case of Dr. Toner, very early developed after he came to Washington. He was for forty years a familiar figure in nearly all the book-stores, book auctions, and junk shops of this and of some other cities, and though reputed a close buyer, he expended largely in amassing medical, historical, and biographical literature. While his specialty at first was medical science, it soon became enlarged to embrace local history in general and what related to the city of Washington and the District of Columbia in particular. He came to be well known as an authority widely consulted upon matters relating to the national capital.

The writer well remembers the zeal and eagerness of the Doctor, on our first acquaintance in 1862, to avail himself of whatever his friend could contribute to his information respecting the authors, editions, and prices of books. From that time on, the ample mansion on Louisiana avenue was the constant recipient of ever fresh stores of books, pamphlets, and periodicals. In the pursuit of his special object, the biography of early American physicians up to the Revolution, he was gradually led to amass material which ultimately developed into a far wider field, namely, first, the personal history of all American physicians, and, secondly, the biography of all Americans inclusively. He carried out the idea of collecting these materials to a much farther point than is customary even among the most assiduous collectors. His aim included the exploiting of a neglected field. Leaving to larger library collections and to fuller purses the amassing of a great library of biographies, he

set to work to gather up the obscure and forgotten facts, the *disjecta membra* of his subject. With this aim he, for several years, had all the exchanges of the newspaper offices searched for obituary notices appearing from day to day, cut up the contents of biographical dictionaries and directories of Congress, and ransacked all periodicals for biographical sketches. The immense mass of material thus gathered he had mounted upon uniform sheets of paper and arranged in strict alphabetical order, thus embodying for the readiest reference a great mass of fugitive biographical data quite inaccessible to the ordinary inquirer. This valuable index, arranged in two extensive cases of drawers, forms a part of the Toner collection in the Congressional Library.

In like manner the Doctor made another collection of obituaries and biographical sketches of all American physicians commemorated in periodicals.

But the specially cherished design, very nearly fulfilled, of the latter years of his life was the collection of an absolutely complete assemblage of all the letters and other writings, printed and manuscript, of George Washington. Dr. Toner had an idea that everything which Washington wrote was valuable, or would become so, to his countrymen. He found that the printed collections of Washington's writings by Sparks and others, who permitted themselves to amend the grammar, the style, and the orthography of their illustrious subject, are quite untrustworthy as transcripts of what he really wrote. So he had strictly verbatim copies made of every paper in the vast collection of the Department of State, and followed it up by securing exact copies of every original Washington letter found in historical societies and library collections, public and private, throughout this country and in Europe. Where no access to an original could be had, he procured and mounted printed copies, ransacking all American books, periodicals and newspapers he could find, and watching every print of a Washington letter, to seize it for his collection, if not already there. This great thesaurus of Washingtoniana, much the fullest yet gathered in any one collection, he arranged in strict chronological order of the papers, and deposited it in his lifetime in the Congressional Library. Thus was performed a most useful and inestimable service to the historical student.

We may next view our associate as a patron of letters and a public benefactor. He founded and endowed in 1872 a course of public lectures, designed to encourage the discovery of new truths for the advancement of medical science. He conveyed about \$3,000 in real and personal property to five trustees, consisting of the Secretary of the Smithsonian Institution, the Surgeon-General of the United States Army, the Surgeon-General of the Navy, the president of the Medical Society of the District of Columbia, instituting thereby "The Toner lecture fund." Ninety per cent of the interest of the fund was to be applied for at least two annual memoirs or essays by different indi-



viduals relative to some branch of medical science, to be read in the city of Washington, under the name of "The Toner lectures," each of these memoirs or lectures to contain some new truth fully established by experiment or observation."

As these lectures were intended to increase and diffuse knowledge, several of them were accepted for publication in the Smithsonian Miscellaneous Collections. The first of the course was by Dr. J. J. Woodward, "On the structure of cancerous tumors," and was printed in 1873. Nine other lectures, by Dr. C. E. Brown-Sequard, Dr. J. M. Da Costa, Dr. W. Adams, Dr. E. O. Shakespeare, Dr. G. E. Waring, jr., Dr. C. K. Mills, and Dr. Harrison Allen, have since been published by the Institution, the last having appeared in 1890. The original fund, of which one-tenth of the annual interest was to be added to the principal and the residue devoted to an honorarium for the lecturers, has grown to over \$5,000 by careful investment. It affords a practical example of a wise method of endowment by which even a small sum may be made to yield instruction to large audiences for a series of years.

Dr. Toner gave a gold medal for three years to proficient students in Jefferson College, and a similar medal for many years past, known as the Toner medal, has been awarded at Georgetown University, for the best essay upon some topic in natural science.

His most notable public benefaction, however, was his gift in 1882 of his entire private library to the Government, the first, and thus far the sole instance of any considerable collection being thus bestowed by any private citizen. The gift, comprising about 27,000 volumes—medical, historical, and miscellaneous—besides a multitude of pamphlets and periodicals, was accepted by a special act of Congress, and a bust of Dr. Toner, executed in marble by J. Q. A. Ward, was ordered by the Library Committee, and is placed, with the admirable full-length oil portrait of him by E. F. Andrews, in the Library.

Dr. Toner, in addition to this gift in his lifetime, bequeathed by will all his remaining books, manuscripts, pictures, and curios to the Library of Congress, while to the Cambria County Medical Association, at Johnstown, Pa., he has given all duplicates of his books and periodicals.

The Toner collection, while of course it largely duplicates what is already in the Congressional Library, also supplements that collection in many important directions, especially in medical journals, while the special and unique collections in biography and Washingtoniana, already referred to, give to it a great and permanent value. It has been catalogued, excepting a portion of its pamphlets and serials, and while hitherto it has never been adequately or even respectably stored, because of the utter want of room in the Capitol, a place of honor in a corner pavilion of the new Library building, selected by Dr. Toner, will be devoted to the arrangement and preservation of his collection.

It may be hoped that other collectors of valuable libraries and of

manuscripts may emulate the laudable example here set, and perpetuate their names and render their collections in the highest degree useful by endowing the American public, through its Government Library, with the valuable stores which they may no longer use.

Dr. Toner was honored by being chosen president of several societies, including the American Medical Association, the American Public Health Association, each of the two Medical societies of the District of Columbia, the Literary society, the Columbia Historical Society, the Washington National Monument Society, etc. He was offered, but declined, professorships in medical colleges, preferring a more comprehensive field of labor.

In the last few years Dr. Toner had suffered occasionally from internal derangement of certain organs, evincing that his naturally strong constitution was being slowly undermined. But he worked on, putting the best face upon the visitations of disease, until the summer of 1896, when he was in the midst of his vacation at Cresson Springs, Pa., where he suddenly breathed his last, seated in his easy chair, on the 31st of August, 1896.

In conclusion, all who knew him will concur with me that the seventy years of our departed friend and brother represent an earnest, laborious, and highly useful life. To few men, indeed, is it given to win so much of public respect and honor; so much, also, of more tender regard and sympathy. His genial companionship, his warm and widely dispensed hospitality, and his encouraging presence and aid in every good word and work, will be widely missed and long remembered in the city of Washington.



NATIONAL ACADEMY OF SCIENCES  
BIOGRAPHICAL MEMOIRS  
PART OF VOLUME VII

---

BIOGRAPHICAL MEMOIR

OF

JAMES HAMMOND TRUMBULL

1821-1897

BY

ARTHUR W. WRIGHT

---

PRESENTED TO THE ACADEMY AT THE APRIL MEETING, 1911

---

CITY OF WASHINGTON  
PUBLISHED BY THE NATIONAL ACADEMY OF SCIENCES  
June, 1911





Very truly yours,  
J. Hammond Trumbull



"Kah wehgitum áhkhutáusukwhös.  
imuk, kah wussekhum, nowau,  
awesuonk" (Luke 1.63)

J. D. Trumbull

Hartford, Conn.

March 15. 1840

Written by Dr. Trumbull in response to a request for something from  
the Indian Bible.



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# NATIONAL ACADEMY OF SCIENCES.

Of the biographical memoirs which are to be included in Volume VII, the following have been issued:

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WASHINGTON, D. C.  
PRESS OF JUDD & DETWEILER, INC.,  
1911.

## JAMES HAMMOND TRUMBULL.

James Hammond Trumbull was born in Stonington, Connecticut, December 20, 1821, the son of Hon. Gurdon and Sarah A. (Swan) Trumbull. His grandfather was John Trumbull, a kinsman of the first Governor Jonathan Trumbull, on whose invitation he removed from Massachusetts to Norwich, in the summer of 1773, to establish a weekly newspaper which should be the organ of the Sons of Liberty in the eastern part of the State. He edited and published the Norwich Packet from 1773 until the close of his life, in 1802. After his death his son Gurdon, with an elder brother, Henry, removed to Stonington, whither another brother, Samuel, had preceded him in 1798. The latter soon after began the issue of a newspaper with the title *The Journal of the Times*, which was changed later to *The Impartial Journal*. Henry was the author of a small volume giving an account of the settlement of the country and the conflicts with the Indians, and of some biographical narratives.

Gurdon Trumbull was a man of marked ability and force of character. The following estimate of him is from the pen of his son, the subject of this memoir:\*

He was one of the band of volunteers who, in August, 1814, defended Stonington against a British squadron commanded by Sir Thomas Hardy. At the end of the war of 1812-14, he was established in business as a merchant, and began to take an active part in the development of the two branches of industry—the seal and whale fisheries—for which Stonington became distinguished, and from which her citizens for many years received large returns. He became a leader in town affairs and an efficient promoter of every enterprise that promised local or public benefit. He represented Stonington in the general assembly in 1840, 1848, and 1851; was a bank commissioner, 1839-40; and commissioner of the school fund, 1849-51. In 1852 he removed with his family to Hartford. He was an alderman of that city, 1854-55, in which years he served as one of the judges of the city court.

From early life Mr. Trumbull manifested an interest in historical and antiquarian studies. He read much, and until near the close of his

\* New England Hist. Geneal. Reg., Vol. 39, 1885, pp. 288-289.



life, his memory was remarkably tenacious. Of the history of his native county (New London), particularly, his knowledge was thorough, ready, and exact.

The latter words are felicitously applicable to his distinguished son, who, reared in an atmosphere of antiquarian and historical learning, developed most naturally that spirit of zealous and painstaking research and precision of statement which he manifested so conspicuously throughout his life.

Gurdon Trumbull married, in 1816, Miss Sarah A. Swan, the only daughter of Capt. Thomas and Mrs. Fanny (Palmer) Swan. The latter was a descendant of Walter Palmer, one of the earliest settlers in Stonington, who had come there near the close of his life. His daughter, Grace, born in England about 1608, was the wife of Thomas Miner, another and prominent early settler of Stonington, whose grand-daughter, Grace Miner, became the wife of Samuel Grant, from whom was descended Gen. Ulysses S. Grant. Other notable families were related through the Swan and Palmer connection, among which were those of Hon. Nathan F. Dixon, an eminent member of the bar and a very prominent and influential citizen of Rhode Island, from which State he was elected a member of Congress for several terms, and his son of the same name, and equally distinguished, who served a full term as United States Senator from the same State.\*

Of his childhood and early education the following passage from Dr. F. B. Dexter's admirable sketch furnishes interesting information.† He

was of frail health in childhood, and was much indoors in early life. He was prepared for college at Tracy's Academy, in Norwich, Conn., and entered Yale in 1838, in his seventeenth year, but with mental attainments and capacities superior to those of most of his class. By the unusual range of his early reading also, and his exceptionally retentive memory, he was marked out from the first as a unique figure. Equally striking with his quickness and brilliancy, which won universal admiration, were the lively sense of humor and love of fun and practical waggy which some of his classmates now recall as his most salient characteristic and which diverted him in part from the sober

\* Wheeler, History of Stonington.

† Proc. American Antiq. Soc., new ser., Vol. 12, 1897-1898, pp. 16-22.

routine of the place. His brain already outgrew his strength, and in the earlier part of the Junior year he was obliged to withdraw from college.

For some time it seemed most improbable that he could ever resume study, but his own strength of will and his father's watchful devotion finally triumphed in his recovery.

While thus debarred from the continuation of his collegiate studies, his active mind found employment in natural history studies, in which he became greatly interested. His residence in Stonington was favorable for these pursuits, as it was the port for many vessels sailing to various parts of the world, whose captains brought home rare and curious objects, and he was thus enabled to add to his collections of specimens, particularly of shells, in which he took a special interest. His collection of these, thus gradually increased, as well as by his own researches along the shores of the region, eventually became one of the most complete in the country, and brought him an extensive correspondence, by which his name was becoming widely known as that of an authority upon the subject.

Among those with whom he was in frequent communication was Rev. James H. Linsley, of Milford, Conn., who, compelled by failing health to retire from the ministry, had devoted himself to the study of natural history, acquiring an extended knowledge of the fauna of Connecticut. Mr. Linsley was a member of the Yale Natural History Society, which had been formed not long before Trumbull entered college, and read several papers before it embodying the results of his investigations.

At the time of Trumbull's entrance to college, Benjamin Siliman, Jr., was the secretary and treasurer of the society, and the relationship to him would naturally have brought them into familiar acquaintance. It seems very probable that Trumbull must have been present at some of the meetings of the society while in college and have had access to its collections and library. However this may have been, he became known to it, and was nominated a corresponding member in April, 1842. It is a significant fact that among the most valuable series in the library of the society was a set of Kiener's



*Coquilles*, of which the greater part was acquired during the year 1839, the remainder early in the following year. This had been obtained at an expense that appears very considerable, having in view the limited resources of the society. Very probably we may here discover an important influence in determining his taste for the study of conchology, which for a time had such a predominant attraction for him, and which he pursued so successfully. Mr. Linsley had been a member of the society since 1837, and, in April, 1842, he read before it a paper which was a catalogue of the Mammalia of Connecticut. This was published in the American Journal of Science the same year, and was followed by similar catalogues of the birds, 1843; the fishes, 1844; the reptiles, 1844, and of the shells. The latter was published in 1845, after the death of Mr. Linsley, which occurred in December of the preceding year. The catalogues were copiously annotated, with curious and interesting observations, many of the notes having been furnished by Trumbull, with whom the author was in constant correspondence. The catalogue of the shells was especially enriched by his contributions, nearly one-third of the entries being attributed to him, and among them two new species which were named for him by Mr. Linsley.

Although thus apparently entered upon a career in which he gave promise of attaining prominence and distinction, he was destined to find congenial occupation in a widely different field. In 1847 he removed to Hartford, and entered the office of the secretary of state, where he remained as assistant to the secretary until 1852. Here his taste for historical studies, the result of his inheritance and home training, naturally led him to investigate the early history of the State and to utilize the original documents to which he had access. He soon formed the plan of reproducing the more important and interesting of these in a permanent form in print, and in 1850 he edited and published at his own expense the first volume of the Public Records of the Colony of Connecticut, prior to 1665, the full title of which is given in the list of his publications. This was followed, two years later, by a second volume, covering the period from 1665 to 1678, and, in 1859, by a third, which brought the series down to the year 1689, with an appendix of

documents illustrating the administration of Sir Edmund Andros. The contents of these volumes were not mere transcripts, but were accompanied with luminous notes which showed remarkable knowledge of the personalities and the social conditions of the period. They are not only explanatory, but are important for the light they throw upon the documents themselves and the circumstances under which they came into existence. They form a contribution of permanent value to the early history of the State, the importance of which is attested by the frequency with which they have been utilized by subsequent writers as a source of information. The series thus so successfully begun was continued under the editorship of Dr. Charles J. Hoadley, and numbers many volumes.

Mr. Trumbull had been appointed State librarian and registrar in 1854, the first to occupy this position, and was a member of the committee to compile the statute laws of the State. He had been nominated for secretary of state in 1852, but failed of election. In 1853 and 1854 the nomination was offered to him, but declined, and in 1858 he was again appointed assistant to the secretary of state, which position he held until 1861. In this year he was elected secretary of state, and, being annually re-elected, continued in this office for five years.

In 1850 he had received from Yale the degree of master of arts, and was enrolled with his own class of 1842, and in 1871 the college conferred upon him the honorary degree of doctor of laws. He received the same degree from Harvard in 1887, and the degree of doctor of letters (L. H. D.) from Columbia in the same year. In 1873 he was appointed lecturer on the Indian languages of North America in Yale College, and his name appears thus in the list of instructors in the college catalogue until 1883, the appointment being virtually a complimentary one, as no duties were required of him in connection with it.

In April, 1855, Mr. Trumbull was married to Sarah A. Robinson, of Hartford, a sister of Hon. Henry C. Robinson, who was also connected with him by another bond of relationship, having married his cousin, Eliza Niles Trumbull. The year after his marriage was spent in a visit to Europe, Egypt, and the East.



Mr. Trumbull was a life member of the Connecticut Historical Society, having been elected to membership in 1847. He was its corresponding secretary from 1848 to 1863, and president from 1863 to 1889. Among the enterprises of the society was the publication of important papers connected with the early history of the State, in a series of volumes entitled "Collections of the Connecticut Historical Society." The first and second volumes of the series were edited by Trumbull, and were published in 1860 and 1870, respectively. To the second of these he contributed an elaborate article on the composition of Indian geographical names, and in the third volume, issued in 1895, under the editorship of Dr. Hoadley, was reprinted the Rev. Abraham Pierson's tract, "Some Helps for the Indians," with an introduction and notes by Trumbull. This had previously been published by him in a separate edition in 1873. It had been originally prepared for the Collections, but the edition of the third volume, when nearly ready for publication, having been destroyed by fire, its issue in that series was consequently delayed.

By a codicil to the will of Mr. David Watkinson, a generous and philanthropic citizen of Hartford, who died in 1857, a liberal bequest was made "for the purpose of establishing in connection with the Connecticut Historical Society a Library of Reference, to be accessible at all reasonable hours and times to all citizens and other residents and visitors in the State of Connecticut," and in a later codicil provision was further made for "the purchase of books for a Library of Reference (and not of circulation), to be kept in the rooms of, or in convenient connection with, the Connecticut Historical Society for consultation, but not to be removed therefrom." By the terms of the will the president of the society became *ex officio* a member of the board of trustees, but Dr. Trumbull had been named as a member of the board before he became president, and he was appointed librarian in 1863. He had been active in its foundation and in shaping its policy, and upon him fell the responsibility for the selection and purchase of its books. He prepared the first catalogue and discharged the duties of librarian until 1891, when on account of failing health he offered his resignation, which was accepted, but he was made librarian

*emeritus*, an honorary position which he held during the remainder of his life. His labors for the library, inspired by his learning and enthusiasm, had resulted in making its collection of books one of the most valuable and important of its kind.

In 1864 he became an officer of the Wadsworth Athenæum of Hartford. In 1866 he edited a reprint of Roger Williams's "Key into the Language of America," with introduction and many notes, and in 1867 published an edition of Thomas Lechford's "Plain Dealing: or Newes from New England," with an introduction and very voluminous annotations. His work on early manuscripts had given him great skill in deciphering difficult handwriting, and he had become an expert, and had found recreation, in the study and interpretation of cipher writing. He had translated a large part of the shorthand of Lechford's manuscript Note-Book, for a projected edition, and had made many notes for it, which were incorporated in the edition which was published in 1885 by E. E. Hale, Jr. He also translated portions of the diary of Henry Wolcott, which had been kept in shorthand, and published some selections from it. A volume published in 1876, in which he showed up the false Blue-Laws invented by the Rev. Samuel Peters and exposed the "unadulterated mendacity" of their author, resulted in some attacks upon his conclusions which were rather acrimonious, without, however, affecting their validity, and his critics were met with caustic refutation and complete discomfiture.

Dr. Trumbull was the editor of the Memorial History of Hartford County, published in two bulky quarto volumes in 1886. Although, in the preface, he did not claim for himself any great part in its preparation, the amount of labor he bestowed upon it was very considerable. The statement of the publisher, in a preface to the first volume, is to the effect that he

has read, annotated, and corrected every page of the great work except the article in Vol. I \* \* \* on the Original Proprietors, which is made up largely from his own notes and memoranda. And it should be added here that Dr. Trumbull's many and very valuable notes upon the early history of Hartford have been put by him at the disposal of the various contributors.



A glance through the volumes shows that this statement is not exaggerated, and that many of the writers of the different chapters had drawn upon his stores of information. He also himself contributed a chapter upon the Indians of the Connecticut Valley containing much that was new and of interest.

His work in the early history of New England had necessarily involved consideration of the aboriginal inhabitants, their language and history. From an early period he had made a study of their language, and had gradually been acquiring a knowledge of its vocabulary and grammatical structure that enabled him to undertake with confidence, and with the authority of a master, the editions of the works already mentioned, in which the language had been preserved. This was a task requiring unwearied patience, skill, and sagacity, for as the early records had not been made under the shaping influence of scientific philological principles, and were dependent upon a crude and unsystematic phonetic method, the attempt to find anything like a well-developed structure of grammatical forms and syntax would have seemed almost hopeless. But his persistent labors were abundantly fruitful of important results. Among other things they brought into clearer light the surprising fact that these languages possessed a grammatical structure of remarkable completeness, comparable with that of the Latin or Greek in wealth of structural forms, and excelling them in the power to express minute differences of meaning. Again, his study of the languages of different Indian tribes, as shown in his "Notes on forty versions of the Lord's Prayer in Algonkin languages," showed they had much in common and were to be regarded, not as independent tongues, but rather as dialectic variations from one parent stock.

In pursuing these investigations he had necessarily made a minute and prolonged study of Eliot's Indian Bible, which was the great treasure-house for the vocabulary of the Algonkin tongue, though popularly regarded as a sealed mystery, a monument of a vanished race, as well as of wasted energy and industry. His labors proved how erroneous were such views, and when his versions of the Lord's Prayer were brought to the notice of members of distant Indian tribes, though at first

they were not understood, when at length a familiar word was recognized the dialectic difficulties vanished, and the whole became intelligible. On this point the testimony of Rev. Edward Everett Hale, who was greatly interested in the Indian languages and in Eliot's work, is very pertinent:\*

There was a fashion perhaps, among ignorant people, of saying that his great translation of the Bible was a book of no use to mankind. But everybody who knew anything about it, was obliged to say that in his study of the tongue of our poor Natick Indians he had unlocked the secrets of that extraordinary system of grammar which extends from the Arctic Ocean to Cape Horn. \* \* \*. The Algonquian language ranged so far to the southward that, as the society will remember, our associate Judge Forbes reminded us that Manteo, one of Raleigh's Indians from Roanoke Island, could have talked with Capt. Smith's Powhatan and Edward Winslow's Massasoit, and probably did.

And again: †

When, therefore, it is carelessly said sometimes that Eliot's Bible is a wretched monument of waste of uniting industry and learning, the remark simply implies that the speaker does not know what he is talking about. Eliot's Bible is the most important book in the literature of a great race, now almost extinct, and, if you please to think so, to be extinct in another century. But it is a perfect example of a system of grammar which proves to be more complete in detail than any of the grammars of any language known in Europe. Its study indeed involves considerations in philological science, the value of which is not yet comprehended. As a vehicle only for the study of language, therefore, Eliot's Bible is a central book of the first importance.

Eliot accomplished wonders in his study of the Indian tongue, and of him, more truly than of any one else up to his time, could it be said that he had "unlocked the secrets" of its complex structure. Of the efforts of the early translators, Trumbull says: ‡

The greater number were first essays at translation into languages which the translators did not yet well understand. That they did not always succeed in giving the precise meaning at which they aimed, or that the rules of Indian grammar were often violated, is not to be wondered at. On the contrary, it is surprising, the difficulties of the task considered, that so much has, on the whole, been so well done.

\* Proc. American Antiq. Soc., new ser., Vol. 16, 1903, p. 178.

† Idem, p. 311.

‡ Trans. American Philol. Assoc., Vol. 3, 1872, p. 117.



Absolute mastery of an Indian tongue is, for one to whom it is not vernacular, the work of a lifetime. "Neither have I yet fully beat it out," John Eliot confessed, after twenty-five years' study of the mystery of Algonkin verbs.

But the progress of investigation has only served to make more evident the immense difficulties which the student of these languages must encounter in his attempts to unravel their complexities and comprehend their subtle refinements in the expression of ideas. The very number of the grammatical forms systematically employed, and the almost unlimited variety in the shades of meaning conveyed by the mode of forming compound words, have perplexed many a student, or have led him into erroneous methods of interpretation. In his article on "The Algonkin verb," Mr. Trumbull remarks that "Professor H. Steinthal, in his psychological classification, regards the American languages as 'formless,'" and that "Professor Fr. Müller, in his memoir on the grammatical structure of the Algonkin languages (1867), and more recently in his *Allgemeine Ethnographie* (1873), concedes true verb-forms to the Mexican and Dakota languages, but denies them to the Algonkin and Iroquois." His own minute and prolonged analysis had led him to a different conclusion from that reached by these distinguished scholars, and he presented in elaborate detail the evidence in support of it. With characteristic modesty and caution he says, before giving the summary of his results:

The facts of language are seemingly opposed to the conclusion at which Professors Steinthal and Fr. Müller have arrived *a priori*. *Seemingly* opposed, I say, because I am not unmindful of Professor Steinthal's warning—that "some languages know how to supply the want of true form by devices so artful as *completely to attain the appearance of real grammatical forms.*"

It is a part of Trumbull's great merit that he was able to establish the reality and definite purpose of some of these forms, and by long, patient, and persistent study was able to show their true place in the grammatical system. Another result of his labors was to emphasize the possibilities afforded by the American languages of discovering in their linguistic peculiarities interesting evidence relating to the early history and migrations of the aboriginal races.

As an aid to his work upon the Indian languages, Mr. Trumbull had formed a vocabulary of Indian words, and for many years was gradually improving and perfecting it. The character of this work is best described in his own words in a memorandum in the latest manuscript:\*

In this first essay or rough draft of a dictionary of the Massachusetts language *as it was written by Eliot*, I followed Cotton in entering the verbs under the form that Eliot regarded as their infinitive mood. I discovered my error when it was too late to amend it in this draft. Ten years later I began a revision of my work, entering the verbs under the third person singular of their indicative present (aorist) in their primary or simple forms. That revised copy I have been obliged to leave, at present, incomplete. The materials for supplying its deficiency may be gathered from this volume.

The work as he left it comprised four manuscript volumes—one an English-Natick vocabulary, two others the first draft mentioned in his note, the fourth being the revised edition of the same, completed with the exception of a few letters, as above described. They had been written with his own hand in the beautifully clear and legible script so characteristic of his careful methods of work. The manuscripts, in accordance with his wishes, were after his death deposited by Mrs. Trumbull with the American Antiquarian Society, through whose agency the revised dictionary was published by the Government, in connection with the Bureau of Ethnology, under the supervision of Dr. Albert S. Gatschet, who was himself an accomplished scholar of the Algonkin tongue.

Great as were the services of Mr. Trumbull in the fields of historical and linguistic study already considered, his work as a bibliographer was perhaps even more conspicuous. His familiarity, even to minute details, with the life in the early New England communities was something marvelous. Hon. George F. Hoar, when president of the American Antiquarian Society, said of him:† He "knows the history, the life, the manners, even the gossip, of every New England generation from the beginning, as if he had been a contemporary."

Not less complete than his acquaintance with the moving

\* Proc. American Antiq. Soc., new ser., Vol. 12, 1898, p. 320.

† Proc. American Antiq. Soc., new ser., Vol. 5, 1887-1888, p. 3.



spirits of that early time was his knowledge of their printed works, which was, indeed, unrivaled. He was thus equipped, as few or none others have ever been, to render unerring judgment upon the significance and value of the early imprints. He was able, almost by instinct, to find in some date, some chance expression or peculiarity of style, the clue to the authorship of an anonymous writing or the solution of some historical puzzle. A characteristic example of this is afforded in his article, "First essays at banking in New England." The information contained in it was derived from three anonymous pamphlets, the authors of which he was enabled to identify: One, Rev. John Woodbridge, by allusions to his personal history; a second, Cotton Mather, from the analogy of the contents of the pamphlet with certain passages in the *Magnalia*, as well as by characteristic peculiarities of style; the third, Rev. John Wise, from references of contemporary writers, and from the mention by them of incidents in his career which were readily verified.

In his fellow-citizen, Mr. George Brinley, Dr. Trumbull had for many years found a warm friend and one in full sympathy with his pursuits. If at times their desire for the acquisition of some rarity brought them into the position of competitors, this in no wise interfered with their friendship. On the contrary, Trumbull ably seconded Mr. Brinley in the labor of many years which resulted in the formation of his rich and valuable collection of rare Americana. On the death of Mr. Brinley, in accordance with the terms of his will, the sale of the library was ordered, and Mr. Trumbull was made one of his executors. He prepared the catalogue of the library, a monumental work in five volumes, published in the years from 1878 to 1893, and embracing 9,501 titles. The amount of information which it contains in regard to the various entries gives it a high value as a permanent contribution to bibliography, and makes it an indispensable aid to those interested in the history of early American printed works. It became so necessary a part of the working apparatus of the library that it was much sought for, and copies of it commanded a high price.

Among other works of similar character should be men-

tioned the list of books and tracts in the Indian language, or designed for Indians, published in 1873 as a part of an article on the "Origin and early progress of Indian missions in New England," and the important volume, published in 1904, embodying the labors of many years in forming a list of books published in Connecticut before 1800. The nature of this work is indicated in the following statement from the Introduction, p. vii:

Among the many literary and bibliographical treasures left by the late James Hammond Trumbull is a series of manuscript slips to which he had prefixed the title, "List of Books Printed in Connecticut, 1709-1800." Some of these slips bear evidence of having been written more than forty years ago, from which time their number has been added to down to the time of Dr. Trumbull's death in 1897, although during his later years the additions were few, most of the work having probably been done before 1878. Each title is in the delicate and beautiful handwriting of Dr. Trumbull, and each is written with the care and neatness so characteristic of his work.

By the courtesy of Miss Annie Eliot Trumbull this list, prepared by her father, has been placed at the disposal of the Acorn Club for printing, and Miss Trumbull has still further increased the club's indebtedness to her by comparing the slips with other manuscript notes left by her father, a comparison which resulted in a few corrections and in the addition of a number of titles that had been noted but not previously incorporated in the list.

The work was edited by Miss Trumbull, who also prepared the lists at the end and the index.

These works by no means complete the tale of his bibliographical work. Hardly less important must be reckoned the vast amount of valuable material embodied in the notes with which he enriched the many works edited or published by him, and the aid he so generously gave to many workers by his correspondence, involving often much labor and research.

Mr. Trumbull's activities were not limited to the works hitherto enumerated. He was a member of many societies, and his communications were frequent and of great value. His connection with the Connecticut Historical Society has already been mentioned. In 1855 he was elected a member of the American Antiquarian Society. He furthered the efforts of the society to collect the public documents of the States by forwarding ten volumes of Connecticut documents, dating from



1851 to 1854, and thereafter made many donations to it. He was appointed in 1870 a member of the committee to report on papers relating to Indian remains and graphic symbols, and made a report of which a brief notice is given in the proceedings of the society. He was made a member of the council in 1872 and secretary of foreign correspondence in 1874. These positions he continued to fill until the close of his life, thus serving twenty-five years in the former and twenty-three years in the latter. He was a frequent attendant of its meetings and an active participant in its proceedings. Some of his most valuable contributions to American history were contained in the reports of the council prepared by him, or in papers read before the society.

He was a member of the American Oriental Society from 1862, and read several papers before it. Of the American Philological Association he was one of the founders. He was present at the first meeting of the association, held at Poughkeepsie, in July, 1869, when he was made a member of the committee to nominate permanent officers, also a member of a business committee, and was elected treasurer of the association. In 1873 he was made vice-president and in 1874 elected president of the association for the following year. He was a member of the executive committee from 1875 until 1883; also, in 1875, of the committee on the reform of English spelling. The annual address of the president, in 1875, was given by him, treating of some general characteristics of Indian languages and upon spelling reform. His papers read before the association were very numerous. They were largely devoted to linguistic questions relating to the languages of the American Indians, but some were of more general philological interest. Most of these were afterwards published in the volumes of the proceedings and transactions, a few, more or less modified or extended, elsewhere.

Dr. Trumbull was elected a member of the National Academy of Sciences in 1872. He often attended the meetings of the academy, where his presence was most welcome, and although he did not present any papers before it, his wit and brilliant conversational powers did much to enliven and brighten the social intercourse among the members. He had been ap-

pointed in 1882 to prepare for the academy the biographical memoir of Hon. George P. Marsh, deceased not long before, but the decline of his health did not permit him to accomplish the work, and in the later years of his life he was no longer able to be present at the meetings.

The societies already mentioned are those with which Dr. Trumbull was most closely identified, but his prominence had brought him membership in many others. He was a corresponding member of the Massachusetts Historical Society from 1850; also member of the historical societies of Maine, Rhode Island, New York, and Wisconsin, and of the American Ethnological Society. He was from a very early date a member of the American Association for the Advancement of Science, and was associate fellow of the American Academy of Arts and Sciences, Boston. He was one of the founders of the Monday Evening Club of Hartford, and retained his association with it as long as he lived.

Although he was so fully absorbed in other interests, Dr. Trumbull had not lost the taste for scientific pursuits which had been so active in his early life. The knowledge he had gained in Stonington was made available later when he aided Prof. S. F. Baird in his work in reference to the history of the whale and seal fisheries on the northwest coast of America. He aided Dr. Asa Gray in the preparation of a paper upon the characteristics of North American Flora for the meeting of the British Association at Montreal in 1884, and he had previously co-operated with him in 1877 in the production of an article in the American Journal of Science on the history of the so-called Jerusalem artichoke, the greater part of which, filled with curious historical learning, was contributed by him, with an introductory note by Gray; and again, in 1883, the two were associated in the pages of the same journal in a long and elaborate review of De Candolle's "Origin of Cultivated Plants," which appeared in three parts, running through several numbers of the journal.

The following, from a notice which appeared in the Hartford Courant of August 6, 1897, gives an insight into his atti-



tude toward historical writing and the high estimation in which he was held by those who knew him well:

Dr. Trumbull might have given us a history of Connecticut that would have stood first among American histories. He was often urged to do so, but he would never undertake the work; and his friends, some of them certainly, attributed this shrinking from something so much to his taste to his fear that it might contain some statement that some other authority would controvert, perhaps disprove. The same caution spread throughout all literature would result in the abolition of histories; but Dr. Trumbull was not going to commit himself to the possibility of blundering, and so never wrote the history that would have been for himself a worthy monument, and for the rest of us a perpetual source of pride and satisfaction. It is a curious freak of fate that the very trait which made what he did write so valuable prevented this crowning work.

Dr. Trumbull was consulted by a multitude of people, and not always with the most satisfactory results. Those who thought he had nothing to do but answer letters sometimes found he had not time for that. People who questioned him foolishly or in annoying ways sometimes got curt replies. Among such he was very likely reckoned somewhat crusty. But he was exceedingly helpful to those whom he saw to be in earnest, and was full of live sympathy with those whose inquiries impressed him as leading to right results. With such he would spend much time, show them authorities, and freely contribute the great assistance that his large abilities made possible.

Dr. Trumbull did not, it is true, complete any works of great extent, and the multiplicity and exacting nature of his occupations would be a sufficient reason for that, apart from the hesitation due to his critical fastidiousness. But although much of his writing was upon detached topics, which gave it, in appearance, something of a fragmentary character, the amount he accomplished was very great, and from its substantial character it will have a permanent value. If his writings upon the Indian languages were to be collected they would form a large volume and constitute probably the most important single contribution to this difficult subject.

During the later years of his life Dr. Trumbull rarely left Hartford, and his activities were greatly lessened by his declining health and failing strength. He continued to grow gradually weaker physically, though hardly consciously to himself, and apparently suffering little or no abatement of his

mental powers. In the summer of 1897 he suffered an attack of grip, and from that failed rapidly. After a period of unconsciousness he passed away on the fifth day of August, 1897, in the seventy-sixth year of his age. He was survived by Mrs. Trumbull and an only daughter, Annie Eliot Trumbull, who had been his devoted assistant, and herself a well-known and successful writer.

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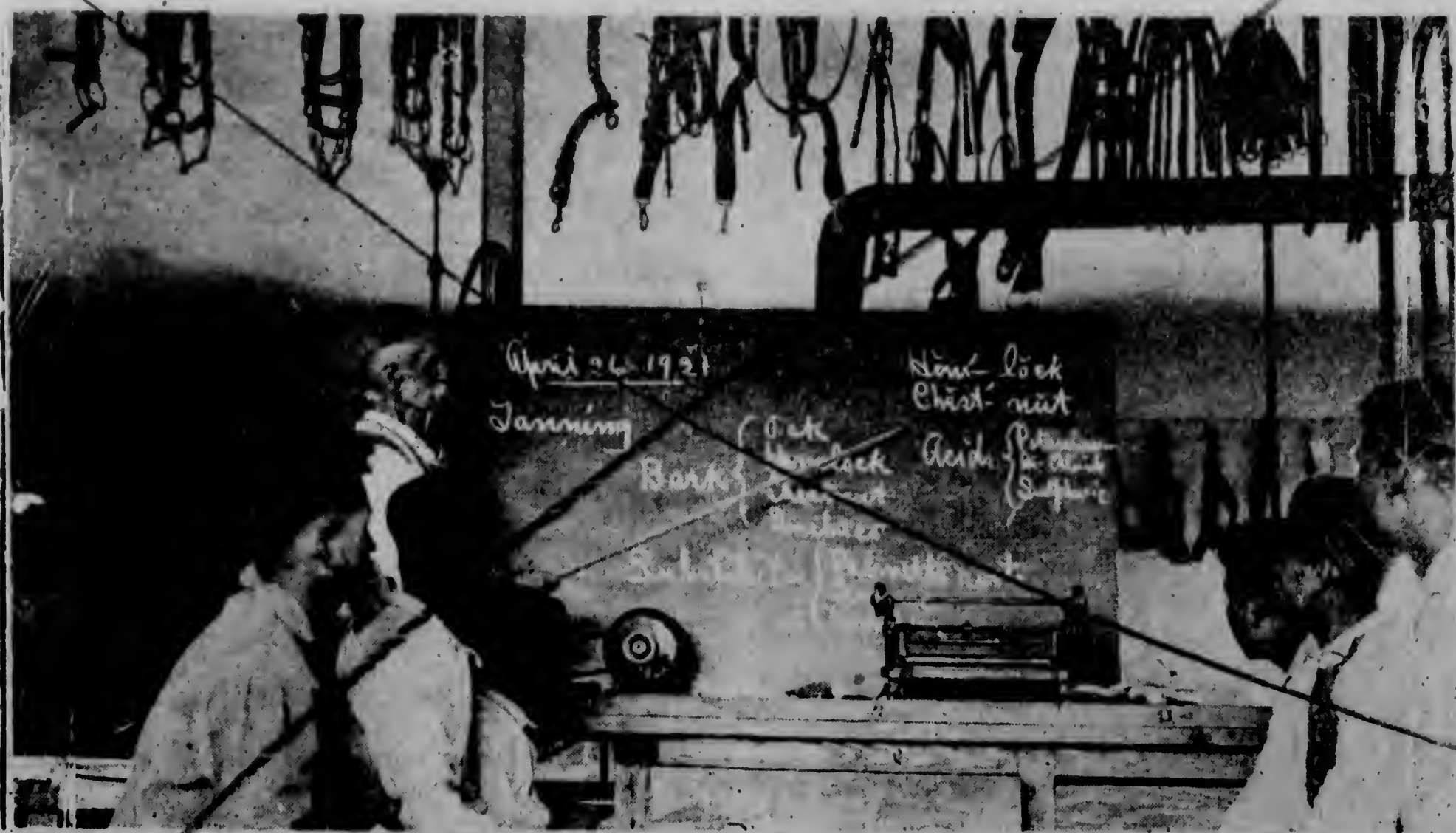
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JOSEPH P. TERRELL IN HIS SHOP

Joseph P. Terrell was born at Huntington, Indiana, November 3, 1856. He lived in Illinois and Wisconsin before coming to Phoenix. He was a consistent and faithful adherent of the Catholic Church, a man of the most scrupulous honesty, efficient in his trade, a kind neighbor and a good husband to his devoted wife. During his long illness he was ever hopeful of return to duty, holding to the idea until the last few hours of unconsciousness presaged the end.

Phoenix School mourns the passing of an extraordinary man. He had exceptional power over the boys of his classes and there was always order without harshness in his shop. He found joy in his work in the old fashioned way of the expert craftsman.

Not the least item of interest and commendation in connection with the illness and death of Mr. Terrell has been the exceptional devotion and care bestowed upon him by his wife and her two sisters and by his two near neigh-

bors on the campus. These have been lessons in kindness and neighborliness not soon to be forgotten.

#### Edward E. Ayer

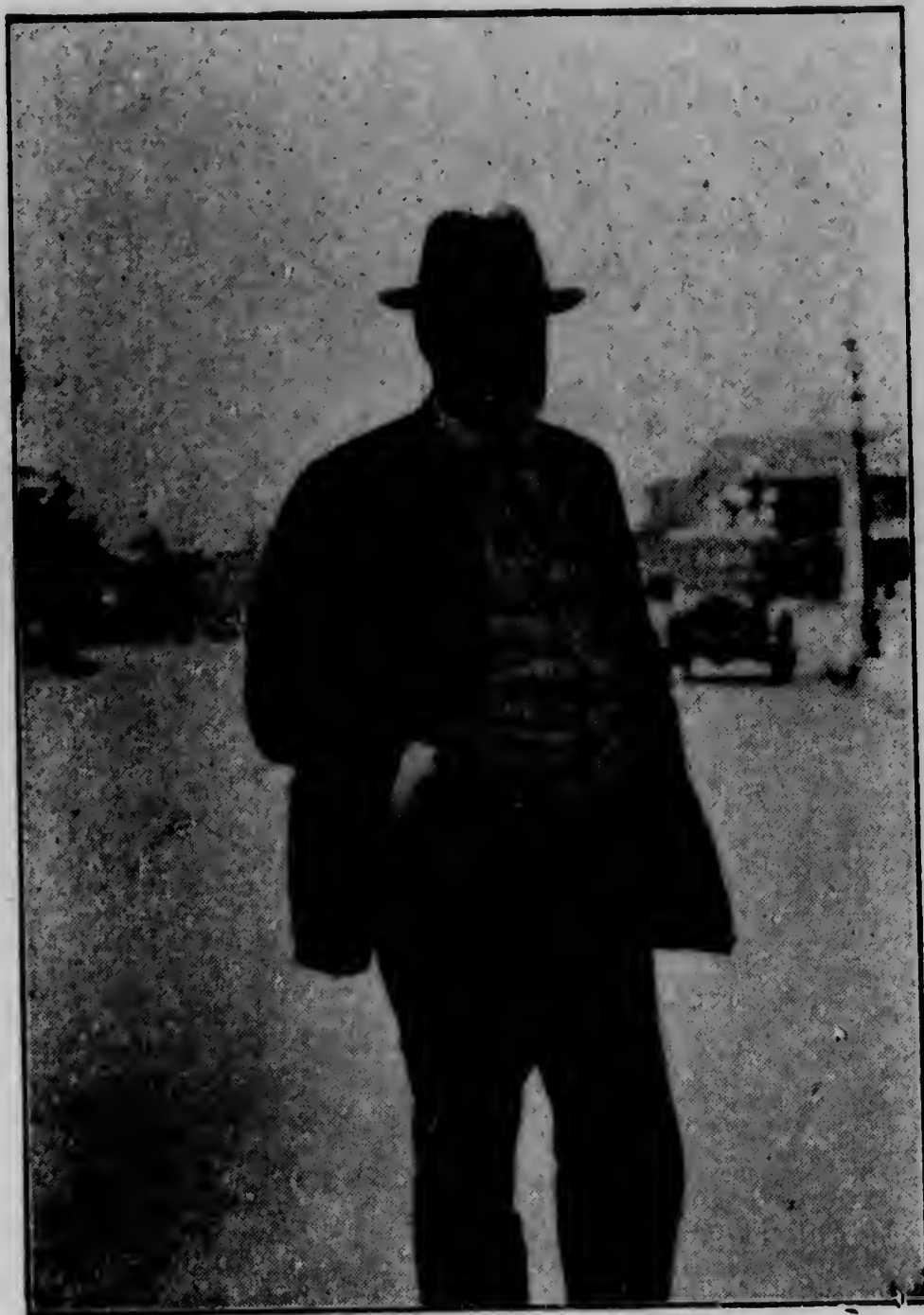
Edward E. Ayer, former member of the Board of Indian Commissioners, died in Pasadena, California, on May 3, 1927, at the ripe age of 86 years. His home was in Chicago although he also had residences in Virginia and Lake Geneva, Wisconsin, spending many summers at the latter place. About ten years ago and for some years he spent winters in Phoenix and vicinity and it was in that way that we came to know him.

Edward Ayer was of the empire building type of man. He first came to Arizona as a private soldier in the regular army during the Indian fighting days during and after the Civil War. Following those years he engaged as a contractor on railroad construction, was a tie contractor for the Santa Fe Company and established the first sawmill in Flagstaff, Arizona. It was the lumber busi-



ness in this State in which he made his great success as a business man and in which he accumulated a fortune rated at some millions.

Mr. Ayer lived well, but money to him was a means of getting things done



EDWARD E. AYER

that ought to be done rather than to be used ostentatiously. He would freight his Locomobile across the Gila River if the high water was otherwise to delay the trip which he proposed to make. He was impatient of delay and impatient with men who hesitated or delayed in attacking difficult problems. He was vigorous, strong and generous. It was these qualities which enabled him to do much for humanity and during his later years his energies were chiefly devoted to works of philanthropy. It was a favorite diversion with him to invite a group of friends to a dinner and during

its progress naively explain that while the dinner was "on" him, it would cost them some specified hundreds or thousands of dollars each for his favorite hospital or art museum. His own unselfish interest and enthusiasm rendered resistance to such appeals quite impossible and he always got the money.

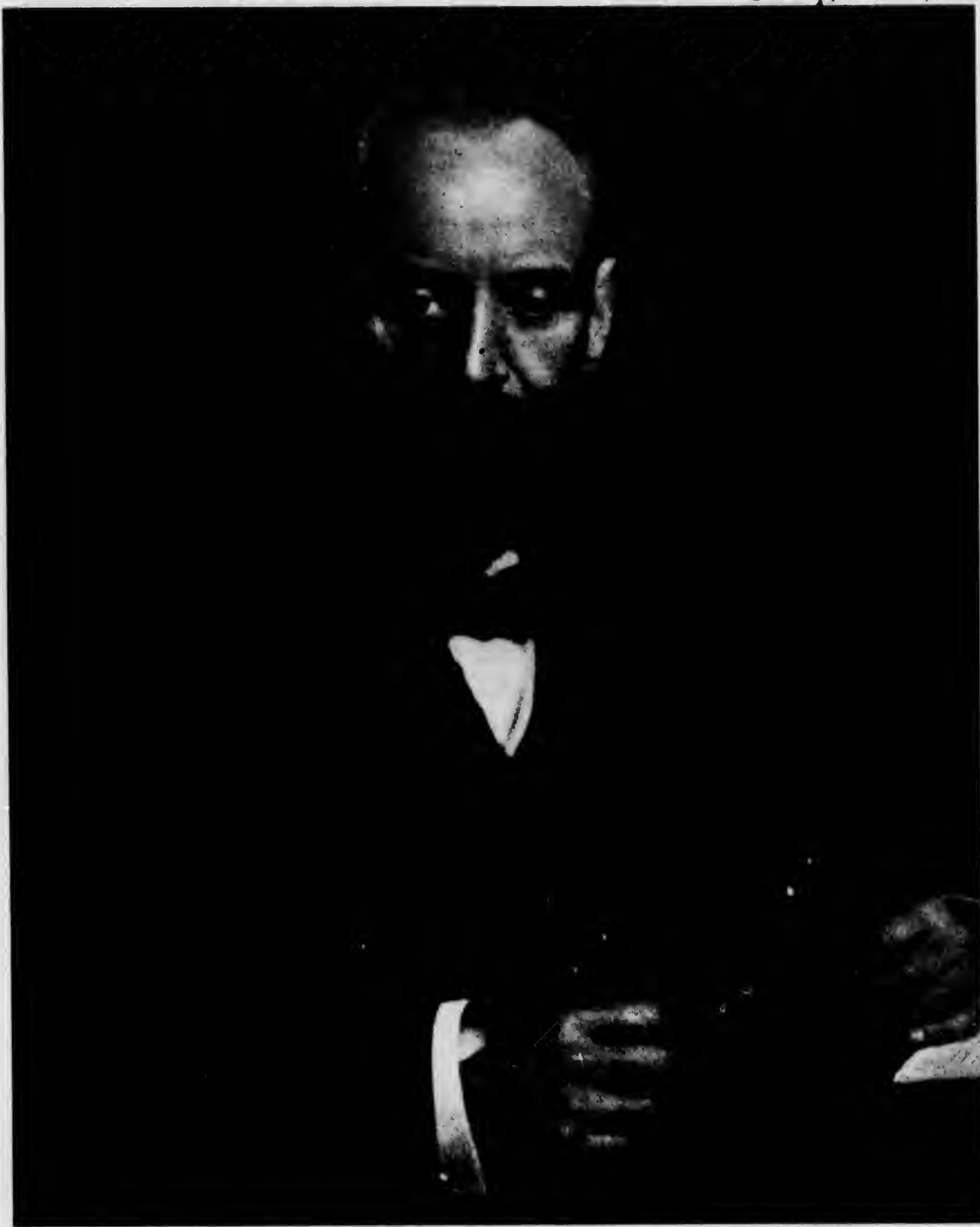
Edward Ayer was one soldier, and there were many such, who learned to appreciate the good qualities of the Indian by first meeting him in battle. He was of the quality of General Crook, his greatly admired chief, and devoted much of his time for many years to the advancement of Indian education and the general industrial welfare of the several tribes, especially in the Southwest.

Mr. Ayer and his good wife were patrons of art and letters, publishing translations of important Spanish books and documents which were the work of Mrs. Ayer. They were patrons of Field Museum and of Chicago Art School besides many similar institutions and projects. He was a lover of nature and of the beautiful in all its phases. He lived long and abundantly, making the world better and happier as he went. He showed men of wealth how to use their wealth and will be remembered with pleasure and gratitude by those with whom he came in contact.

A secret is usually the seed of a scandal.

It takes time to make a position out of a job. That is why nearly all worth while positions are filled with men who have been on the job a long time.





## Rudolf Martin 1864-1925

### Recollections of Professor Martin as a Teacher

By DINA JOCHELSON

THE CLASSICAL and monumental work of Professor Martin, *Lehrbuch für Anthropologie* has furnished the very foundation for anthropological instruction particularly relating to anthropometric technique. I leave to others the preparation of memorial notes expressing appreciation of the deceased as the scholar ranking with Broca, Ranke, and other great

anthropologists. It is my wish to say a few words about Professor Martin as a teacher.

I was a candidate for a degree in medicine in the University of Zurich in 1900 when I was notified that I was to take part in the Siberian Division of the Jesup North Pacific Expedition. The leader of this Division was my husband, Waldemar Jochelson, and I was expected to take over the anthropometric



making yarn. The implements used in weaving, and spoons are the most commonly encountered. Such specimens show the same artistic feeling, if less technical skill, that is found in the textiles, pottery, and metal work of ancient Peru.

The best specimen of old Peruvian wood carving in the Museum's collection was excavated by A. F. Bandelier, at Pachacamac, in 1894. It is  $4\frac{1}{2}$

inches high, and represents some high potentate, or perhaps a god, about to decapitate a man. In his right hand he holds a hafted stone ax. His left hand grasps the prostrate victim by the hair of his head. The victim's arms are tied behind his back. On the back is carved a man with headdress. He also holds a hafted ax in his right hand. The specimen is much defaced by the work of borers.

❧ ❧ ❧



Right side.—The object is hollow, and it is very possible that it was carried on a stick in some ceremonial. Some hollow metal objects were so carried



Left side.—The depressions representing the eyes and mouth were doubtless once filled with nacre, as were also the circular depressions

work in Siberia. In order to prepare myself for this field work I registered for the regular courses in anthropology given by Professor Martin, and also for the laboratory work in the anthropological institute of the University of Zurich, which had been created by Professor Martin. Subsequently, in 1903, my dissertation for the degree of M. D. was also an anthropological one and was prepared under the direction of Professor Martin.

Professor Martin's courses were required for students in the natural sciences but not for medical students. His lectures, however, attracted students from various faculties, historians, geologists, and others. It is well known that people ordinarily prefer to study foreign lands rather than their own country. So it is with anthropology, the science of man is often found less interesting than the knowledge of other zoological divisions. Professor Martin, however, had the secret of winning large audiences to hear about man. His lecture room was always filled to its utmost capacity, and he never inquired whether his hearers were entitled to admission or not. He was interested rather in the diffusion of knowledge than in fees. He was rewarded for his disinterested devotion to science by the interest with which his hearers followed his lectures. His friendly personality and graceful appearance were in themselves attractions, and his clear voice, and fluent, eloquent, High German speech animated the

dry bones of human anatomy even as a mountain brook flowing down bare Alpine rocks would add life and interest to a landscape. For example, no one could be more strongly scientific and at the same time more clear and popular in his presentation of the Darwinian theory and its bearing on the history of man's origin.

When Professor Martin learned that I was going to undertake field work, he gave me special instruction in addition to his regular lectures and the laboratory hours.

I shall always remember his yearly receptions at his villa near Zurich, where his anthropological students were invited to join his family circle. General unrestrained conversation was followed by scientific discussions. Professor Martin at that time was working on his handbook, and among his students were the now prominent anthropologists: J. Czekanowski of the University of Lwow, and D. Schlaginhaufen of the University of Zurich.

Professor Martin was as great a scholar and teacher as he was a man. The last two years of his life he experienced constant physical suffering; nevertheless, he continued his lectures, and in his last months, when he was confined to his bed by heart disease, he wrote reviews and edited his anthropological journal. He remained at his post until his last breath, and in him science lost one of its greatest soldiers.

## A Biographical Sketch

By CHAS B. DAVENPORT

ANTHROPOLOGY has suffered a grievous loss in the death of Professor Rudolf Martin at München on the 11th of July last. There may have been greater anthropologists; but it was he who organized the science of physical anthropology.

Rudolf Martin was born July 1, 1864, at Zurich, the only son of a manufacturer. He studied at the universities of Freiburg i. Br. and Leipzig, receiving the degree of Ph.D. at the latter university, submitting a thesis on Kant. Probably under the stimulus of Wiedersheim and Weismann also he became interested in natural science and became docent in anthropology at Zürich in 1891.

Here he laid the foundations of his life work. In 1899 he became ausserordentlich professor and in 1905 full professor. He early undertook journeys to see for himself the centers of anthropological research on the one hand, and primitive peoples on the other. He traveled in France, England, and Spain. He journeyed to Patagonia and published on the physical anthropology of the natives (1893) and on ancient Patagonian skulls (1896). He journeyed to the Malay Archipelago, also, and there studied the Semang and Sakai (or Enoit) on which he published in 1905. These experiences in the field acquainted him with certain defects in the available anthropometric apparatus and led him to the invention of a



set of instruments for which he found a skillful manufacturer in P. Herrmann of Zurich. In 1911 he relinquished his chair in Zurich, partly for reasons of health and especially to devote himself to the publication of his *Lehrbuch*. At the outbreak of the war he had to leave Paris hurriedly, where he had done most of his literary work. Shortly thereafter he sent his book to the publisher, whence it appeared in 1914.

In 1917, after the death of Ranke, Martin was called to München as professor of anthropology. He united the anthropological institute and the anthropological, prehistoric collections of the city, and raised both to a preëminent position. He undertook an extensive investigation of the effects of war and its aftermath upon child development, measuring and photographing thousands of school children. Recently he became interested in the bodily form of athletes and the possibilities of physical development in students of secondary and higher grades of the educational system.

Rudolf Martin was a man of quiet mien with a capacity for ceaseless work. Literally to the day of his death, while kept from excruciating pain only by narcotics, he dictated letters, revised theses, wrote up his researches, and revised his book. With this industry was a love of order and detail. Thus, in 1907 he published a system of physical-anthropological bibliography (following a decennial classification), incited thereto by his friend, Dr. H. H. Field of the Concilium Bibliographicum. This industry and love of detail were combined with erudition and breadth of view; and this combination made possible his epoch-making *Lehrbuch der Anthropologie*, a treatise of 1200 pages, with 460 figures and including a bibliography of 100 pages and a very large number of tables. In this book the compilation of a single table often involved the review of scores of authors. Finally, in his last years

he founded the *Anthropologische Anzeiger* and personally collected titles and news for this quarterly.

Martin's organizing ability is shown not only by his book but also by his Institute, which became perhaps the greatest in the world, and by the city-wide scope of his anthropometrical investigations. Martin's ingenuity is revealed by the instruments that he invented, and his quality as a teacher by the number of his students, by their varied published researches, and by the loyalty which they yielded to him, as was especially shown on his sixtieth birthday. To help in instruction, he prepared, while at Zurich, a set of twenty-four wall charts in anthropology, ethnology, and geography.

The breadth of Martin's interest was very great and made him a delightful companion. That he was a student of Kant has been told; in describing his travels he considered zoölogical and geological questions, as well as anthropological. In his treatment of the Senoi he traces their history and relationships, and shows them to be one of the most primitive of peoples. He was a connoisseur and collector of art, a lover of music and of nature.

Martin's place in anthropology will probably be recognized in the future as this: the contributor of an account of the anthropology of two primitive peoples, and student of the development of children and of athletes; the organizer of instruction and perfecter of anthropometric instruments; and the founder of a new era by the publication of the greatest compendium of the science of physical anthropology that has ever been produced. Doubtless just this love of organization and completeness interfered with the conduct of numerous, original researches of a fundamental sort. In a way he sacrificed much of the fame that comes through a great contribution of original work in order to organize a science that stood badly in need of organization.





blasphemes in one breath. But I have endeavored to give him his due. In the Hawaiian Islands, where the question of shipping my hero to San Francisco\* is now under discussion, there is a bounty on his head. The reader may draw his own conclusions as to whether the animal is a proper candidate for naturalization in California.

Edna, Cal.



Miss Constance Goddard Du Bois, whose striking novel of Southern California (first published as a serial in these pages) has just been brought out by Stone, is a typical New England woman. She has handled a difficult story with quiet, precise yet earnest touch; and the outcome does honor to her head and heart. Her local color is accurate almost beyond comparison with any other fiction which has Southern California as a field. Less impulsive and inspired than Helen Hunt, whose *Ramona* stands alone, she wholly avoids Mrs.

Hunt's too frequent blunders of minor detail; and her general picture is quite as true in its humanity. Its love episode is a nobler one, if not so compelling, withal; for it crosses a deeper gulf—the impossible gulf of race-prejudice. But so



CONSTANCE GODDARD DU BOIS.

Photo. by C. F. L.

\*It has been forbidden by the Treasury Department.



prison. We administered to them, all at once, an entire family of five rats, caught in one trap on the preceding night. These they dispatched one at a time, each with a single bite in the nape of the neck, devouring them with fiendish energy.

They also partook cheerfully of the bananas we laid at their feet; but such was their fierceness and activity that to tame them or even to take a photograph of them was an impossibility.

Like most persons under suspicion, the mongoose is probably the victim of many libels. I have seen it stated that



A SCENE IN JAMAICA.

he attacked pigs and kittens; yet so far as I know, he never carried off one of the wolfish kittens or sucking swine that swarmed at Savanna Point.

Further knowledge of the mongoose—no less accurate than entertaining—may be found in Kipling's first "Jungle Book," the mongoose of Jamaica being the identical Rikki-Tikki-tavi of that thrilling narrative. In fact, Rikki-tikki-tck-tck is what the diabolical little animal actually says, with his red eyes blazing, the incarnation of hatred and race-prejudice, all hisses and curses; for I am convinced that in his own language he curses, swears and



FLORENCE FINCH KELLY.

far as truthfulness to fact and nature goes, *A Soul in Bronze* is the peer of *Ramona*; and fiction though it be, very few sermons are as true as *Ramona*.

Miss Du Bois, who has written *The Shield of the Fleur de Lis* and several other books of esteem, is at home in Waterbury, Conn.; but spends her summers in California in earnest efforts to relieve the Mission Indians, who are cruelly crowded to the wall.

Florence Finch Kelly, whose rousing story of New Mexico, *With Hoops of Steel*, was noticed in these pages last month, is a young looking and sensitive-faced woman—upon whom this her latest photograph seems to me a libel, for in fact she looks very like a wild rose. She was born in Illinois, but grew up in Kansas and graduated at the State University at Lawrence. After graduation she went at once into newspaper work, briefly in Chicago, then in Boston; and was for three years an active editorial writer on the *Boston Globe*, as well as art critic. Through a presidential campaign she had entire charge of the Troy, N. Y., *Telegram* editorial page. Then she married Allen Kelly, a well known newspaper man who had been co-laborer with her on the *Boston Globe*. They started a weekly paper in Lowell, Mass.; then (those who have started weeklies may supply the gap before the next word) went to Fall River. Then newspapering in New York and San Francisco, and then to the New Mexico sojourn. From the cowboy belt they came to Los Angeles, where for about a year Mr. Kelly was city editor of the *Times*, and Mrs. Kelly its literary editor, as well as an active staff writer. They have roughed it a good deal together in the Rockies and the California Sierra. Both are now in Philadelphia, where Mr. Kelly is an editorial writer on the *North American*, and Mrs. Kelly an occasional contributor. She reckons herself "a Kansan, more than anything else."

From cowboys to child-study is a good rifle-shot; but Western sights are adjustable for all ranges. When anything whatsoever needs doing, there is a Westerner to do it. Miss Milicent W. Shinn (sister of our own Chas. Howard Shinn) is a native Californian, born in Niles where she and her brother still live; a graduate and Ph. D. of the University of California, and for several years editor of the *Overland Monthly* when it was a magazine. For several years



she has been going deeply into genetic psychology, after the lines of Preyer; observing and recording minutely the unfolding development of the mind and body of her brother's baby Ruth. Her book, *The Biography of a Baby*, just issued by Houghton, Mifflin & Co., is an important contribution to the scant literature of that intimate problem which is on every home blackboard, but is so rarely attempted to be solved. And it is an interesting record, as well as a scholarly one.

\*  
\* \*

Charles and Louise Keeler—whose new book, written by him, decorated by her, is noticed on another page—are on a cruise to "Tahiti and way stations" in the South Seas.

### A SAGE-BRUSH OASIS.



FOR several years a pretty sure welcome has been standing in this office for MSS. in blue covers in a firm, round fist and with the postmark "Humboldt, Nev."—if you chance to know where that dot of the map is on "yan" slope of the Sierra. These stories and sketches are of the literary merit which inheres in directness, sincerity and impulse. It is not too much to call them well written—but even more, they are well felt. They are earnest and honest work; and of an excellent sympathy and strength. A harassed editor often wishes he had to read no MS. less like dried cod than the alive contributions signed Idah M. Strobridge.

Up on that remote and beautiful mountain ranch, a long way out of the world—as the world wobbles now—this ranchwoman of the sage-brush is turning her own competent hands to several good uses. Aside from the big ranch on the Humboldt, she has a gold mine up in the cañon—and there is no tenderfoot overseer. And as house-keeping and mining and ranching are not enough for a really active spirit, and as writing is only half enough recreation, Mrs. Strobridge has plunged as heartily into book-binding. Not as a fad, nor yet commercially; but, so far as can be seen, for pure love of work worth while. And though this sage-brush artisan has been studying out this exigent trade by herself, off there in the wilderness, her work is emphatically worth while. A commercial-bound book looks cheap beside her staunch and honest and tasteful bindings; and when I have a book that merits to endure longer than the commercial binds can make it, off it goes to Humboldt—and never in vain. The old tomes on my shelves will last as well—the books bound from one to four centuries ago—but practically none of the modern ones will keep their jackets so long.

The "Artemisia Bindery" (for so Mrs. Strobridge merrily calls her home work-and-play-shop) is not open for business. If it were, it would have its hands full—since there are still people who care less for a \$50 binding on a dollar book than they do for good books bound with so much honesty and sincerity as are most rare now. Her binding is Love's Labor Won. One of the oldest and most famous binders in the United States told me he did not believe a book I showed him from her hands could be more substantially bound anywhere.



*Sherman Bulletin - March 2, 1923.*

## **Dr. Carlos Montezuma.**

Dr. Carlos Montezuma, full blood Apache, for many years a successful physician in Chicago, died on the McDowell Indian reservation on February 1, 1923 and the funeral was held in Phoenix at the First Baptist Church. Pall bearers were cadets in uniform, from Phoenix Indian school and members of the school's teaching force were in attendance. Burial was at Ft. McDowell on Sunday afternoon the 4th, in accordance with the often expressed wish of the Doctor. The Masonic ritual was used at Ft. McDowell.

Carlos Montezuma, as a child of about two years, was captured from his Apache tribesman by the Pimas. He was taken from the Pimas, it is said, by purchase, when the boy was about four years old, by a traveling photographer who afterward became a prominent citizen of Chicago. Later the young boy was given into the care of a Baptist minister, Rev. Boardman, of Urbana Illinois. He became a member of the Baptist church and so remained, being a teacher in a Bohemian Mission Sunday school for some years in Chicago.

He has been many times and properly pointed to as the best example of what civilization may do for a full blood Indian when given a fair chance. He went through the public school system, graduated from Illinois University and from the Medical College of Northwestern University. At one time, for about two years Dr. Montezuma was physician at Carlisle School Penn., and had previously served at Indian Agencies in the Northwest.

Dr. Montezuma was a strong advocate of the abolishment of all Indian Reservations and the turning loose of all Indians. At times he engaged in bitter controversies with Indian Service officials on this point and in connection with many of the details of Indian reservation affairs. His influence was especially strong with his own tribe, the Apache and this influence will not end with his passing. The Doctor leaves a wife to whom he was married in Chicago but has no other surviving relatives who are of near kin.

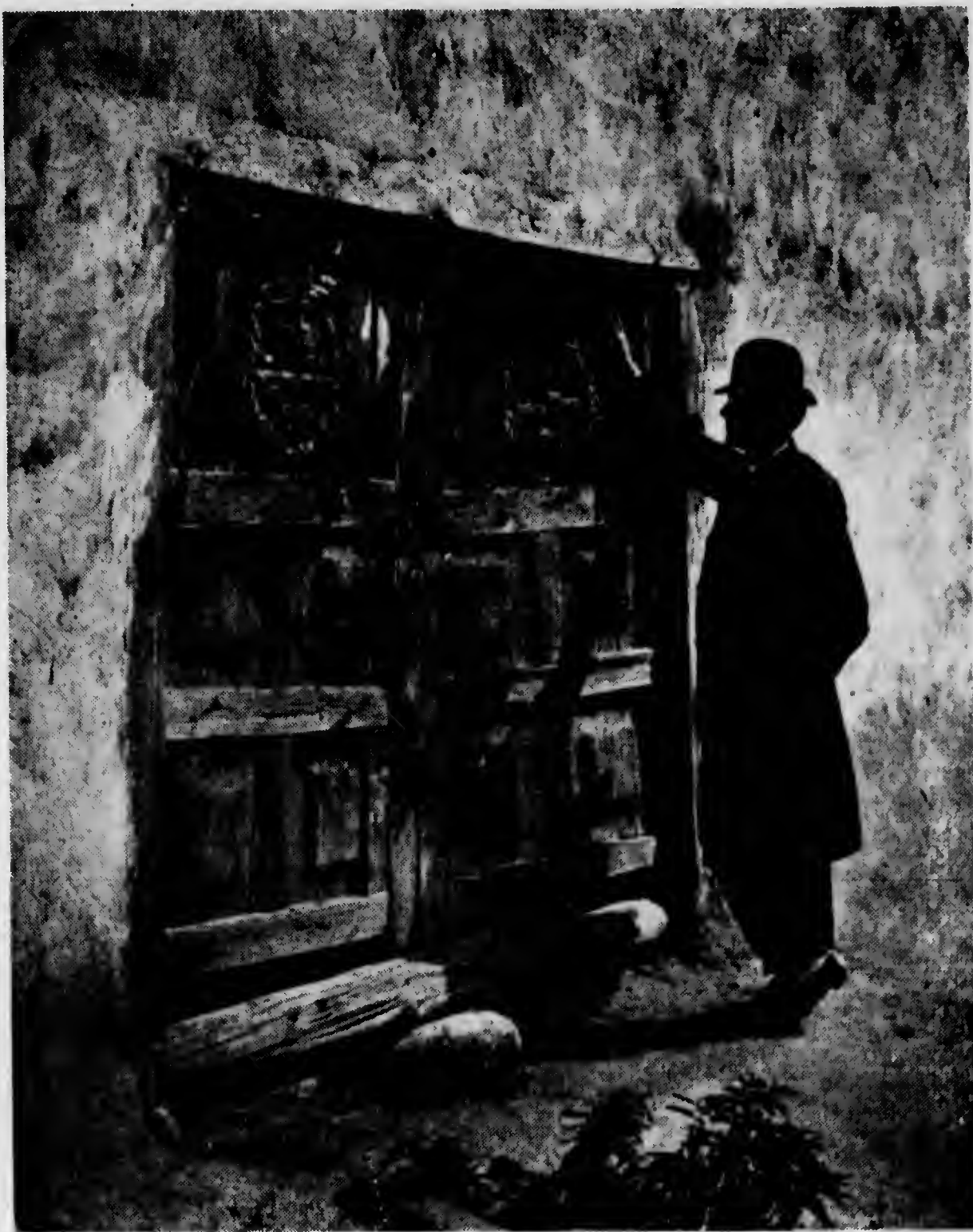
At Dr. Montezuma's funeral many interesting features of his life were brought out by the Pastor Rev. Percival, by Col. J. H. McClintock, State Historian and by Major J. D. York, the latter two men having known him for over 25 years.—*Native American*



## A HERO IN SCIENCE.

IT is no careless traffic in words to say that no other great scientist has had so romantic a story (if a story so little known) as the unnoised Master of Southwestern history now returning to the United States from years of studious exile in South America—Ad. F. Bandelier. Romance, however, is so little his vocation, and so pre-eminent among his great achievements has been the throttling of Romance where it does not belong (namely, as false color in history and science)\* that we need not dwell too much on the personal vicissitudes of this strange genius. For to him they are merely matter of fact. And really they weigh only as they give us to understand the courage, devotion and equipment of this man's pursuit of knowledge through unparalleled difficulties and dangers. Only three or four men intellectually his peers have cared to desert their pleasant studies and cushioned chairs to pursue the same truths; and none, nor all of them, have approached his cost of tuition. Even Humboldt, his great master, never did a tithe of his rough travel; nor has any man of anything like Bandelier's rank in science remotely paralleled Bandelier's foot-sore search for the Holy Grail of Knowledge. His only match has been John Muir, the prophet of glaciers and the Sierras. These two have voluntarily done and suffered more in this line than any other as well educated men in human history. One who has passed in a crowd for athlete and student, best knows how to measure these extraordinary intellects, framed in by no means sturdy bodies, who wear out the mere athletes and distance the mere heroes.

Bandelier was born in Berne, Switzerland, Aug. 6, 1830, and came young to this country. Paternally suppressed, and attempted to be made a banker in Illinois, the spirit in him was too strong to be quenched. By and for him-



L. A. Eng. Co.

BANDELIER AT THE OLD CHURCH OF SANTO DOMINGO, N. M.  
(Destroyed by flood, 1881.)

\* He has driven the last nail in the coffin of the Romantic School of American History, whose head was the noble, brilliant but unfortunate Prescott; and whose death-knell among scholars Lewis H. Morgan sounded (in 1868, if I remember well).

*Bandelier*  
*back of Smithsonian, August 1900.*





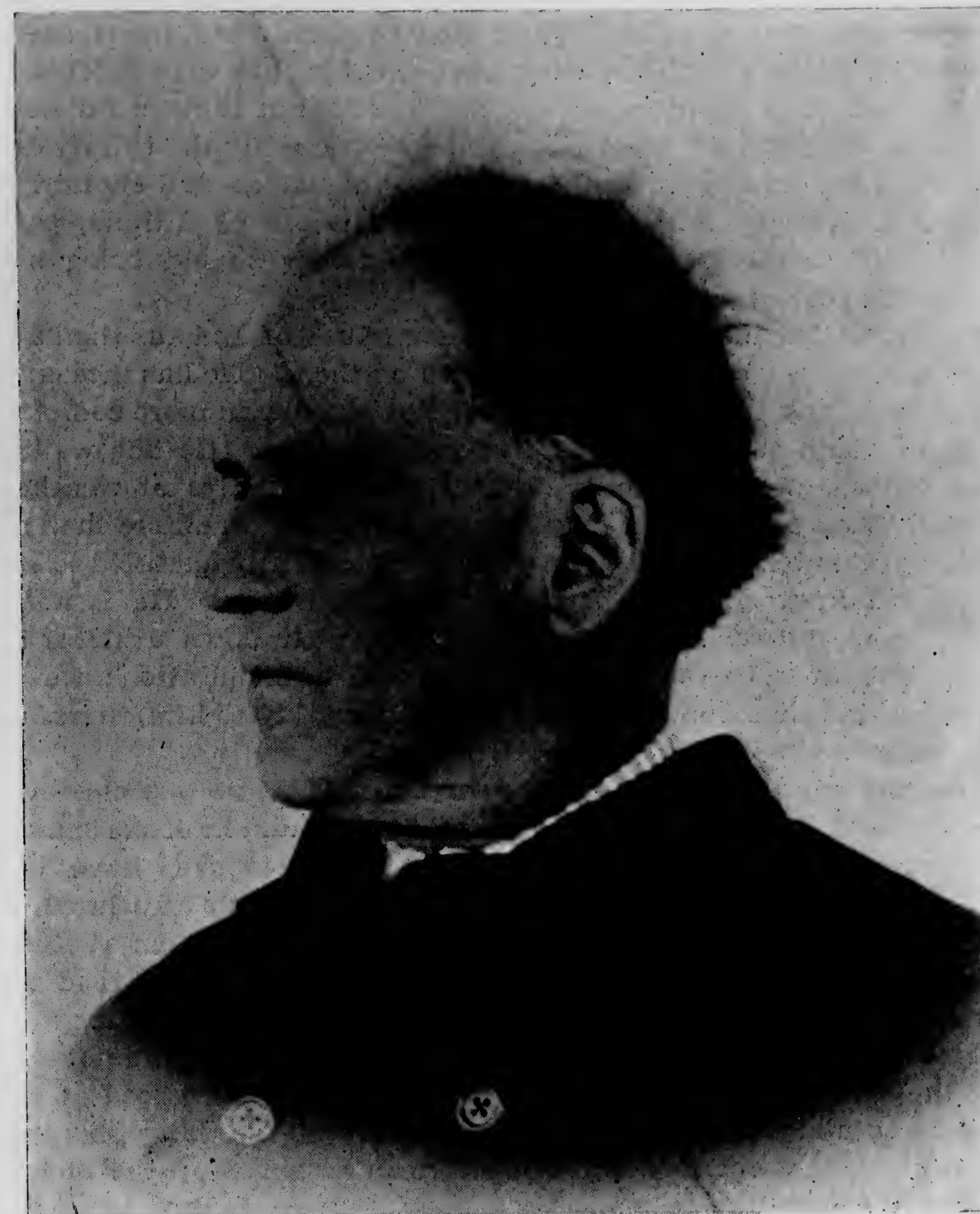
BANDELIER, FROM A PHOTO. IN HIGHLAND, ILL., ABOUT 1891.

self, without the aid of colleges, he laid wide and deep the foundations of his great work, through patient and repressed years. The devoted and admiring friendship of Lewis H. Morgan, the Father of American Ethnology, whose mantle has fallen upon him (in fact and by legacy), was one of his best and most enduring inspirations. Nor has Humboldt ever had a more grateful or a more competent disciple.

It was not till about 1880 that Bandelier was able to enter fully upon his great plan of precise exploration. Nothing that can strictly be

called scientific research had ever been applied to the ethnology of any part of the West—if of the United States at all. Catlin's monumental flounderings were not science in any sense; and the soberer work of better endowed men was but little prepared. It was not very deeply grounded in the documentary evidence, and hardly at all in field observation.

Bandelier was the first who brought to this wonderful mine of Knowledge an adequate equipment and applied it adequately. He had already acquired such command of the "documentary sources" of Southwestern history and ethnology as no American scholar ever rivaled. With Dr. Moore of the Lenox Library died the only man who was his peer in the bibliography of Spanish America; and neither Moore, Winsor, Fiske nor Parkman had anything like his intimate mastery of the documents behind the titles. This is no derogation of these men whom every American scholar reveres; they simply never gave this line of study one half the time that Bandelier did. All of them put together, it is no exaggeration to say, were not so much at home, nor so critically masterful, in the language in which nearly all the most important early chronicles of American ethnology were written. None of them had his extraordinary genius as a linguist, either. I have seen him come among strange tribes and in two weeks converse pretty handily with them in their own outrageous tongue. As for his critical knowledge of values in language of past centuries, he has but one possible rival in the United



AD. F. BANDELIER.

Photo by C. F. L., 1891.

States, and that one not a scientist. It hardly needs be said that dealing with 16th and 17th century Spanish is a profession by itself, and that only one, even of the born-Spanish scholars of America, (Ricardo Palma, litterateur, not scientist) has achieved fame in it.

It was for the Archæological Institute of America, highest of all our associations of scholarship, that Bandelier did his monumental work in and upon the Southwest. His *Reports* in the papers of the Institute are the very backbone of our authority. Written as densely as a Qualitative Analysis, without a trace of Parkman's exquisite grace, hard to read as Algebra, they are nevertheless literally the bible of Southwestern history and anthropology.

And they are an honest bible. They were not evolved from arm-chair guess-work, and the easy exploration of book-covers. To *Know*, he trudged all over (and many times over) the vast spaces of



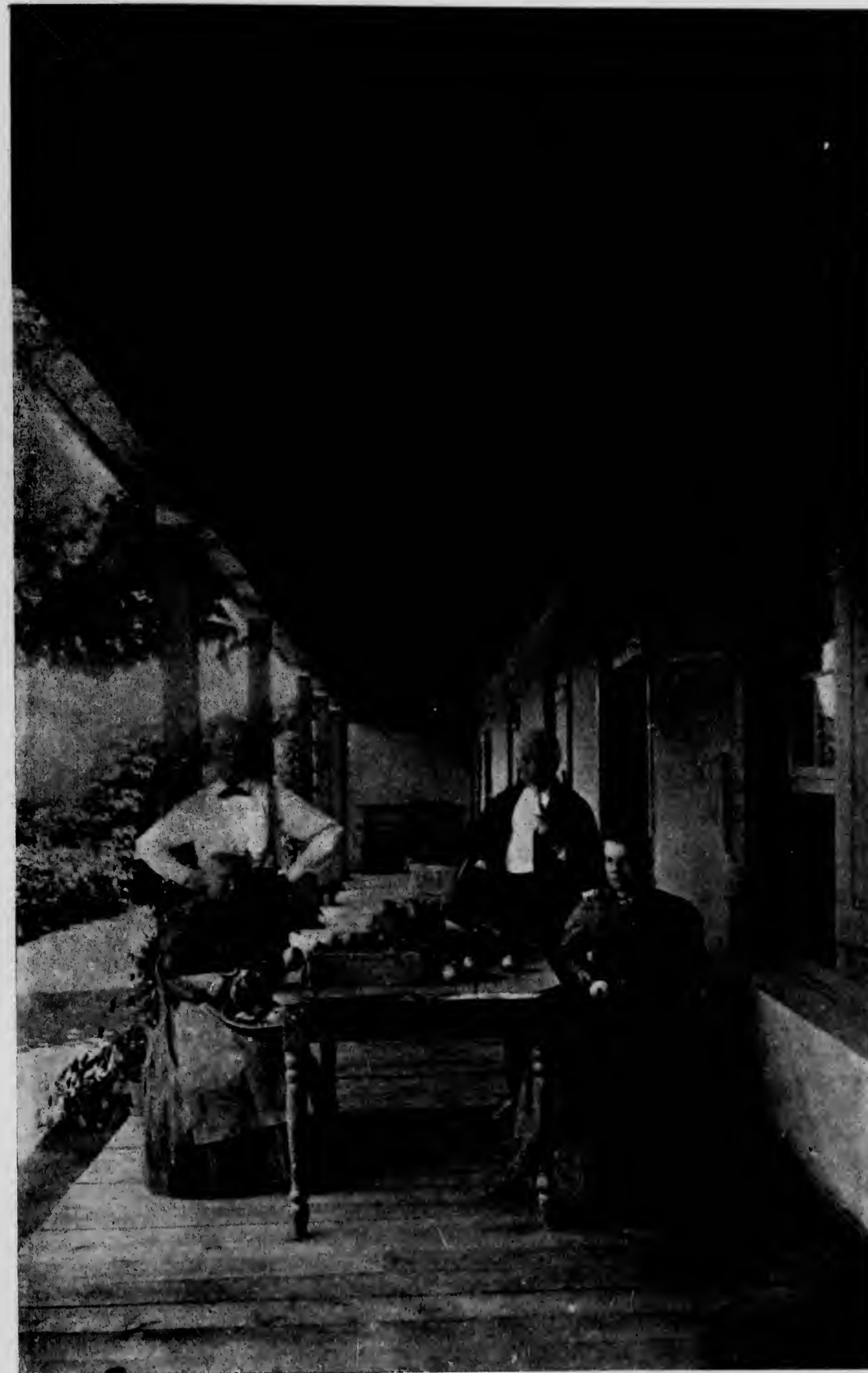
New Mexico, Arizona, Mexico, and their borders, afoot, unarmed—in the heart of the Apache country when the Apaches were reddest on the warpath, and frontiersmen and soldiers did not venture far without some strength of arms and numbers—tramping the thirsty deserts, bleeding on savage lava-flows, lying out alone and shelterless with small-pox in the Manzano snows; careless of fatigue, pain, hunger, thirst, and deadly danger—so only they should bring him toward his goal.

He has visited and exactly probed more tribes of Indians than any other student alive—more than any two of them. He has measured more prehistoric ruins, and more precisely, and drawn more complete plans of them than any other five archæologists. He has walked more miles, and harder ones, endured more hardships of weather, fatigue, thirst and hunger, than any ten of them—and more than all the historians of his rank put together. I feel fully qualified to say this, for I know all their trails, by page and map. He is not a strong man, either. But I have seen him wear down athletes by sheer dint of not—so much will, perhaps, as inspiration; for in pursuit of his ends nothing seemed to be a hardship to him, therefore not a matter of will. It was just the natural thing.

Knowing what had been written in his field as no one else ever knew it—and its literature is in strange tongues and in books shamefully rare and inaccessible to the American student (I have just finished copying one of the three extant copies, never translated, of one of the most indispensable of them, valued by its owner at \$2500)—he learned the field as no one else ever learned it. He learned the physiographies and the peoples about which these chronicles were written. No wonder he could translate both as those could not who dug the words out of an incomplete dictionary and guessed at the landscapes and humanities! For Science is really nothing on earth but consummate common-sense, mysterious as some of the quack-scientists would like to make it. Fancy anyone writing judiciously about us and our habits who had never seen America and could not speak a word of English—and there you have exactly the vast majority of the men who have had the confidence to write of the Southwest, and of Western history and ethnology in general.

Bandelier had charge, also, of the documentary investigations of the Hemenway Southwestern Expedition—and was shabbily enough treated in the final collapse of that ill-fated undertaking. His vital work there has not been given light, all the light that was left being saved for the important dullard who tried to inherit its halos.

In 1892 Henry Villard endowed a three-year scientific expedition to Peru and Bolivia, of which Bandelier was head and front. I had the honor to be a handy-man, continuing our association in the Southwest. Mr. Villard's failure and retreat to Europe broke the contract when it was about half run; but Bandelier hung on indomitable. For the last few years his work in that richest and most fabled field of research has been under the auspices of the American Museum of



THE OLD HOME AT SANTA FÉ.

Bandelier.  
His first wife.His father.  
His niece.

Photo. by C. F. L., 1891.



Natural History, Central Park, New York, for which he has gathered incomparably the largest and most valuable collection in the world of Peruvian and Bolivian antiquities. His is, in fact, the first absolutely scientific exploration of those lands. Humboldt's travels were *travels*, generic, not specific, research, and in nowise comparable for thoroughness. It is the highest tribute to his genius that the most crucial investigation by detail hardly ever disturbs his general conclusions. Squier, who had done nobly in the Mississippi Valley, and admirably in Central America, is absolutely discredited in Peru. His sumptuous book already foreshadows the disease of which he died—softening of the brain. Clements R. Markham was just the man for transplanting teas and exploiting quinine, but not quite the man of science. And except Von Tschudi, whose term of insight was too short to enable his abilities, the rest need hardly be catalogued at all. There will be among scholars the keenest interest while we must await the Bandelier reports which shall be for the scientific truth about the long-fabled Incas, Yuncas and their neighbors what his reports have long been for the ancient civilizations of the Southwest—our highest Court of Appeal.

It is more than eight years since Bandelier left the picturesque old adobe home in Santa Fé. Since then he has not seen the United States. The brave old wife who accompanied him to the far country died there soon after their arrival. Since then he has married a young, beautiful and extraordinarily gifted woman from his own native town—a delicately nurtured, queenly girl who has shared with him the constant hardships and frequent deadly perils of explorations more cruel than Stanley's African adventures. Among the cannibals of the Amazonas, the sullen, bloodthirsty Serranos of the Andean Plateau, in wildernesses which have no parallel whatever on our northern continent, at altitudes themselves more deadly than yellow-fever epidemics, for half-years at a stretch without decent shelter, food, or any other convenience, and amid perils as mortal as the heroes of fiction ever faced, these two have toiled and suffered—and learned. Had I time to write romance, I could invent nothing more startling than the real story of this strange pair.

By the time these lines are in type, the Bandeliers will doubtless be in New York, there to arrange the great collections and complete the Final Report. After that (a year or two, I suppose) they plan to return to South America—but it will be a lasting reproach to American scholarship if they are permitted to. Bandelier belongs to the United States, though it has never paid for him! It is indeed disheartening how little we support scholarship of the world-caliber; but if we have no money for the Bandeliers, Coueses, Matthews (my plural is a poetic license; there has never been but one of each), we do give them something larger.

At 70—and how impossible that figure seems to me for that ruddy-faced, tireless man whom I have physically tested and found indomitable; who could walk after he was physically dead!—scholarship needs him anchored. He has done his share—ten men's share—of field-work. We need him now to sit down and write betimes, before his learning shall die with him, the digest of his unparalleled research. Now, that it be not lost.

CHAS. F. LUMMIS.



Herman Ehrenberg.

A.S.Taylor gives the following notes on Herman Ehrenberg in the Calif. Farmer:

"We are happy to announce in the numbers of the Indianology, the appointment of an old friend, Herman Ehrenberg, Esq., to the special agency of the Indians of the extensive Mohave and Colorado mining districts. From what we know of this gentleman from his residence in California since 1848, we believe the Government could not have made a more worthy selection, and of one better acquainted with the tribes of the Colorado & Gila country, where he has resided since 1855. Mr. Ehrenberg is a Prussian by birth and a relative of the great naturalist of that name. He is the author of an excellent map of Ariz. and Sonora, which has gone through two editions, and is a gentleman of excellent education and principles. Ehrenberg has laid out towns in Humboldt Bay, Monterey County, and in the Colorado Valley, and is well known in our state as a topographical surveyor and has been a most indefatigable traveler and explorer of Pacific domain, particularly in S Calif., Arizona, Sonora & Sinaloa"--A.S.Taylor, Calif. Farmer, Aug. 28, 1863.



# A Deal in Aguardiente

(While engaged in some research in the Bancroft Library, University of California, some little time ago, I had occasion to refer to Thomas O. Larkin's Documents for the History of California, an imposing array of correspondence that passed between him and the chief citizens of the period. Well forward in the first of the nine volumes, I found a group of stained and almost illegible letters, that had passed between Larkin and John Temple, pioneer American merchant in Los Angeles.

A cursory reading revealed that they dwelt upon an engrossing, not to say amusing, phase of California trade of the period, 1839. And as I read farther it became readily apparent that they contributed vastly to an understanding of the perplexing problems that confronted the early traders. The Bancroft Library courteously and kindly granted permission for their use in TOURING TOPICS.

So they were transcribed and are printed here in an exact copy, with all the orthographical peccadilloes and errors in spelling that are to be found in the aged originals. It is interesting to note that Los Angeles frequently is referred to simply as "Angeles," or the "Pueblo," and the date on some of the letters is written in Spanish.

It will be recalled that Larkin came to Monterey in 1832; married, in 1833, the first American woman to live in California; and that his son, Thomas O. Larkin, born in 1834, was the first child to be born of American parents in California. Larkin was an active California trader, and in 1843 was appointed United States consul. He died in San Francisco in 1858.

John Temple arrived in Los Angeles in 1827 and opened the first general merchandise store in town. Temple Block and Temple Street were named for him. He died in San Francisco in 1866.—P.T.H.)

Temple to Larkin

Angeles, MAY 5TH, 1839.

Mr. Thomas O. Larkin,

SIR:

YOURS of the 5th April I received when in Sta. Barbara the other day and should have answered it by the return mail, but I was waiting for Mr. Park's arrival to know something about the aguardiente.

I shipped the aguardiente and consigned it to Mr. Park, with orders to sell it on my account, but provided he did not dispose of it all to leave the ballance with you, as you had wrote me that what you wanted for your own use you would allow me 60\$ per bbl in hides, and thought it would com-

mand that price. It is a little singular that Mr. Park did not give you an account of it as he had both a *guia* and an invoice.

There was 17 bbls. in barriles and 10 bbls. or 180 gals. in the casks—making 27 bbls. You say that it took 1½ bbls. to fill up the casks. I told Mr. Park that in case it leaked a little the casks might be filled up with water and then be stronger

any, or but little more, from this quarter this year. Consequently should advise not to sell it less than 60\$ in hides or 50\$ in cash, but as the circumstances are as they are, if you choose to take the whole 27 bbls. without making any deduction for leakage, that is to say pay me 675 hides for the whole 27 bbls. @ 40\$ you may take it, and in case the flour you send can be sold at the price you have mentioned it will be taken in part payment. The barriles and casks must likewise be returned to me or others in their room. Should you not comply with these proposals, I wish you to reduce

the whole to good first proof and Cr me with 60\$ per bbl. for what you use and hold the remainder at the same price or 50\$ in cash on my account.

I shall expect an answer by the return mail. Please write what good San Gabriel wine will fetch and the probable quantity that can be sold.

Nothing new of importance. Respects to all.

Yours,

J. TEMPLE.

Temple to Larkin

Angeles, MAY 23 DE 1839.

Mr. Thos. O. Larkin

DR. SIR:

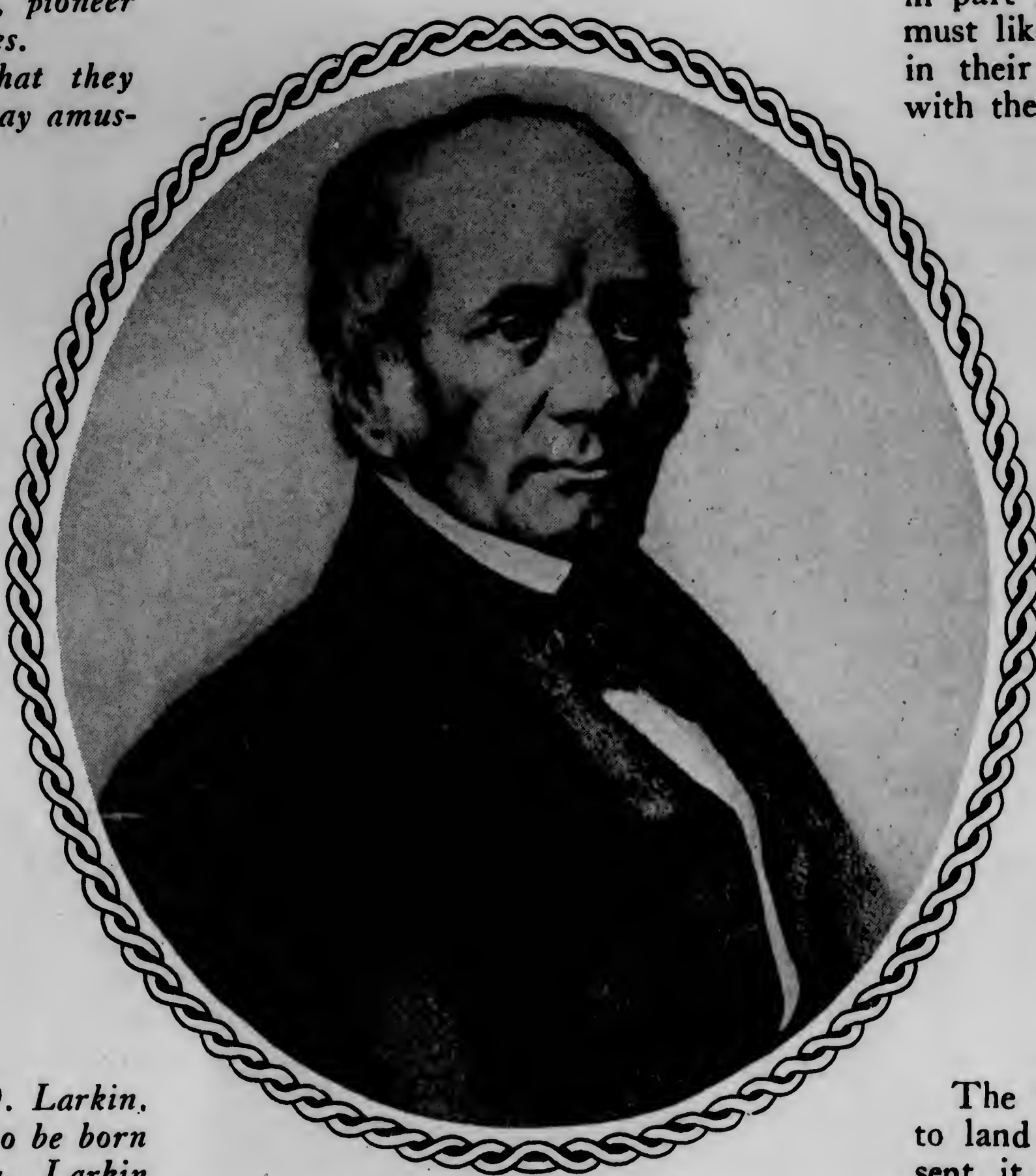
THE "Alert" left in the house at S. Pedro a lot of flour said to be from you, but Capt. Penhallow did not write me how much there was, and yet I do not know.

The "Alert" stopp'd only long enough to land the flour. I am afraid you have sent it to a bad market. I cannot get an offer for it; I may probably work off some of it at retail, but I am afraid it will sour as soon as hot weather comes on. The fact is, wheat is much more profitable to buy than flour, even at 12.20 reales arroba for which reason I doubt whether the quantity you have sent can be sold before it will spoil.

I have had a number of chances to buy wheat at 2\$ fanega in goods and have refused to purchase, because there is no demand. I have not had a single call for wheat, corn or beans this year, which has not happen'd these number of years, in fact the people have nothing to buy with. Business is at almost a compleat standstill. I have not done half as much as I did last year by this time. This year wheat has been brought from S. Diego for sale. By the last mail I wrote you about the aguardiente. I shall expect you to write me by next post and give me some instructions about the flour.

Respects to your family,

Yours, J. TEMPLE.



THOMAS O. LARKIN

Pioneer Californian and first United States Consul at Monterey. From an old print in the collection of the California State Library, Sacramento

than the average aguardiente as it was over 20 pr. ct. above proof; weighed by a first rate English hydrometer so that on that score he need apprehend no loss, but I suppose he neglected to do it in the multiplicity of his business in entering the vessel. But that is nothing, it can be done now as well as any time. You say that aguardiente is selling aboard vessel for 50\$ in hides, but you must recollect that Mr. Park's aguardiente is foreign and subject to a heavy duty to the retailer and moreover that the bbls. hold only 13½ gallons which makes more than half difference to the retailer. I have sold a number of bbls. here for 50\$ in hides, without any expense, and the probability is that it will fetch 50\$ in cash before there is any more made; as more than ¾ of what was made has been sent away or consumed and bad prospects for the next crop, so that you may not expect



of England, the Percheron and Demisang of France, the Orloff of Russia and the Morgan and American Saddle Horse of the United States—all have a strong fountain head of Arab blood. The blood streams of the true modern Arabians are unpolluted and have been kept pure during hundreds of years intervening since the first importations of Arabians into England.

Research has established that, of all the horse tribes that are descended from the Libyan, the Arab has always been the most outstanding. It is well known among horsemen that the best of the Arabians are represented by five great families: the Kehilan, the Seglawi, the Abeyan, the Hamdaini and the Hadban.

"There is a pretty tradition," says the ranch folder, "about the origin of the five leading families of Arabians. It is found in some of the old Mohammedan legends. Mohammed, so the story runs, anxious to secure mounts that would stand up under the rigors of his campaigns, kept a hundred mares penned up in sight of a sparkling stream—but without water—for four days.

"Finally released, the frantic animals dashed for the stream. Just when they were within a few yards of it Mohammed caused his bugler to sound the call to halt. Five obeyed—but the others continued their mad dash for water. These five, at the first notes of the bugle, aligned themselves in perfect battle formation—thus proving their blood. They were known ever after as 'The Prophet's Mares' and, bred to the best Arab stallions, are said to have been the progenitors of the five leading families of the breed."

To appreciate the Arabian, one has only to know his points; and when one is once familiar with them, he will recognize these same qualities in other fine breeds of horses.

In evaluating the Arabian, Captain W. A. Kerr, V. C., a distinguished horseman, said that the horses were animals "whose blood, no matter in what channel directed, or with what plebeian puddle mingled, has ever brought improvement in some shape or other; but mainly in respect of quality, stamina, nervous energy, ivory-like bone, tough hoof and hereditary soundness."

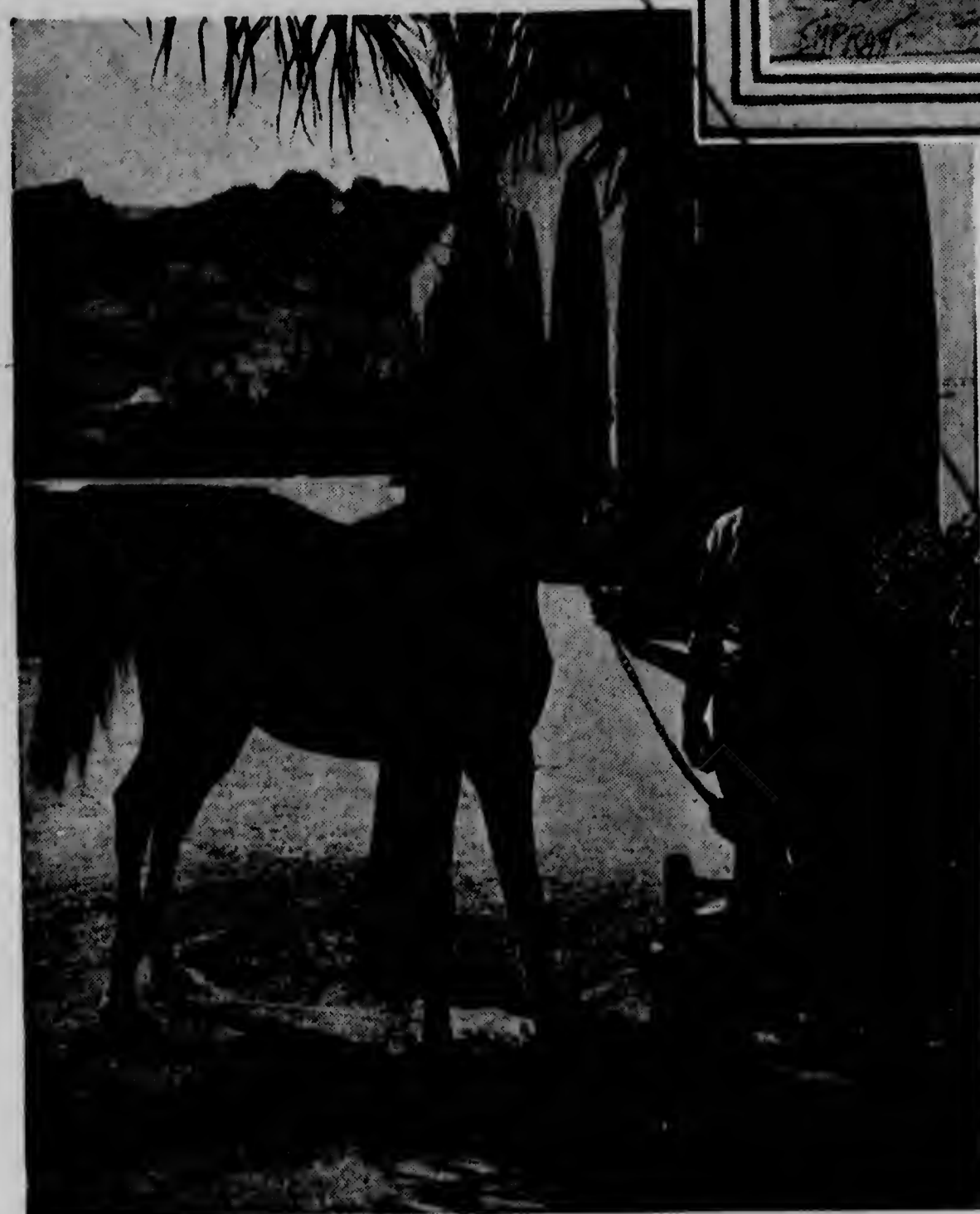
In non-technical language, the Arabian may be described satisfactorily to set him apart as an individual. His height at the shoulders runs from 14 to 15 hands (four inches to a hand), and occasionally higher in some instances. In time, the stable feeding is going to increase his general bulk, though his average weight is 1000 pounds.

He has one less vertebra in his back than other horses, which makes it short-coupled and strong. His tail contains two less members and is carried high. His brain is larger than ordinarily. And his bones are of a greater density and can therefore support more weight and strain.

A generously wide forehead, with large, wide-apart, expressive eyes of a blue cast,

gives the Arabian a grand outlook and lends power to his head shape. Because this full brow is accompanied by a slender, almost delicate muzzle there is a consequent dip above the nose that betrays the Arabian in profile. You may cover the velvet-soft muzzle by the cup of one of your palms.

His jaws are large and prominent and attention is always called down from this point to the loosely fixed windpipe, close to the surface of the throat, thus developed for entire freedom and lack of constriction. This characteristic, coupled with the Arab's splendid lungs and chest cavity, makes him the supreme endurance animal and weight-carrier over long distances



The filly, Shemseh, sired by Nasyk, is also a ranch figure. Here the photographer has caught this young Arabian in a very spirited attitude

—a horse never known to have been wind-broken.

Crabbet, an Arabian owned by the United States government, and seven-eighths brother to Nasyk at the Kellogg ranch, traveled 300 miles in 49 hours and 4 minutes, carrying a load of 245 pounds. The horse himself weighed little more than 900 pounds.

Fleet he is, as well as enduring, and though not essentially bred for racing, the Arab contributes pricelessly to racing strains. For more than 127 years, every winner of the English Derby descended from Arabian stock. Nearly 87 per cent of the winners descended from one great stallion—Darley Arabian, imported in 1706. Many of this



Above are shown the stallion Baseyn (fore), and Antez, Grand Champion at the Los Angeles County Fair in 1928. Both have won many honors. This photograph shows great animation and expression and is one of the few instances where two Arabian stallions have been taken standing so close to one another without fighting

country's foremost racers hark back to Arabian sires.

The Arab horse is thin-skinned, his coat soft and silky. His skin itself is very dark, although about the muzzle it often is flesh pink. The neck is well arched and the mane usually copious and flowing. He is readily adaptable to nearly any climate or environment and his health is outrageously good.

The Bedouin tribesmen have maintained the purity of the Arabian strain with inordinate care. On the endurance of their horses often depended their very lives, and studs were handed down from father to son as a precious heritage. With the advent of Mohammedanism, horse breeding was incorporated with their religion as a divine command, and it became increasingly difficult to obtain Arabian mares.

The Arabs trace the family or strain of their horses through the dam. The family name of the dam is always given the foal, no matter what the family name of the sire. When an Arab tells you the lineage of a horse he is selling, you may rest assured that he is telling the truth. His religion insists on thorough honesty as to purity of breed.

Because this animal has always lived where feed for him was scarce, his food demands are much less than those of other horses. He eats about one-third less than the ordinary horse of his size and work capacity. At the Kellogg ranch he is fed hay in the morning, a little alfalfa and some

(CONTINUED ON PAGE 54)

## Certain correspondence that passed between John Temple and Thomas Larkin, illustrating the vicissitudes of trade in California ninety years ago—

Larkin to Temple  
Monterrey, JUNE 4, 1839.

Mr. John Temple  
DR. SIR:

YOURS of the 5th & 23rd of May I have rec'd by due course of mail. I missed writing by last mail, forgetting the day. I will take your Brandy at 27 bbls. at 50\$ providing Capt. Penhallow or you make good two bbls. that appear to be lost or unaccounted for. When Capt. P first told me he had the brandy, he said there was 17 bbls. in 18 gallon bbls. and 10 in large casks. He afterward said there was 15 in bbls. and twelve in the casks. I earnestly requested him to come to my house and measure them but he did not come. I know that one bbl. marked T was taken on board again.

Capt. P. delivered to me 10½ bbls & those casks saying that he had used one and a half to fill up the other bbls. I therefore consider that the ship owes two bbls. When I said I could purchase at 50\$ in hides I referred to county bbl. and not to the brandy from the ship C. Capt. delivered to me before the ship C. came in. Mr. Park was not here and when he arrived he said he had no letter or instructions respecting the brandy. I thought it strange but had to sell it at market price.

About half of this lot of brandy has now been sold at fifty-five dollars. I paid three dollars duties per bbl. including the cask. I have on hand twenty bbls. I gave forty dollars half cash. This was five dollars above the price on board.

I will therefore take the brandy at twenty-five bbls. (or 27, the other two being forth coming) paying fifty dollars in hides or flour per bbl. including the bbl. The hides I will try to have on board the ship "Monsoon" before she reaches your port, about half of which is now on board. The flour you can take at 2\$ per fanega at your port, I paying freight, but if it's a fact that fine flour will not bring two dollars in hides at your place, paid down or to good customers for hides at three months you shall have it at a less price. It must be sold for less rather than it shall lay on your hands and suffer injury from keeping.

I have a letter from the Pueblo saying good flour might bring twenty reales cash. I suppose it's by retail. I think good wine will sell for fifteen hides per bbl. Celis sold his at 25\$ cash and offers his brandy at 40\$ cash. Hoping my proposals will be satisfactory to you I shall wait your answer by return mail—I believe they are near

your own offer.

Yours & c  
T. O. LARKIN.

Temple to Larkin  
Angeles, JUNE 20TH, 1839.

Mr. Thos. O. Larkin,  
DR. SIR:

YOURS of the 4th came duly to hand, in answer to which, as regards the Aguar-



JOHN TEMPLE  
One of Los Angeles' first merchants. From an old painting, by courtesy Perry Worden, founder of the California Archives for the Collection and Preservation of California Historical Data

diente I have only to repeat, that as circumstances have been such you may take the aguarate at 1350\$ in hides or tallow delivered on board any vessel trading on the coast & by returning the casks; by which trade I shall make a loss.

If you did not receive all the aguarate I shipp'd in the "Alert" and can make it appear that there was a bbl taken on board again after being landed, I have no doubt but Mr. Park will make it good to you, but he has told me you rec'd the whole and had acknowledged the rec't of 26½ bbls—be this as it may. If you see fit to take it on the conditions I have here repeated you may do it or you may abide by the instructions you have rec'd as regards the sale, in which case I shall hold you responsible to me for 60\$ per bbl—for what you use yourself, as I have your signature to that

effect.—but I should chose to close, it at once.—As regards the flour I should not like to take it on my a/c, but will do the best I can with it—as yet—I have made no sales, nor do I know how much there is of it; Capt. Penhallow kept some of it on board—I rec'd 8 Bags & 21 bbls.—but as you have not mark'd the weight & tare I shall have to weigh it Gross and afterwards take the tare out after selling it, which was a bad way of fixing it.—As I sell the flour I shall pass it to your Cr.—I shall send up some wine by Celis so if you wish to purchase you can do it of him—I wish you to send me the casks the aguarate was in, as part of them were borrow'd. Business very dull—I have the governors order on the custom house for 446\$ which was to have been paid out of the California duties but it was not done nor can I get an answer from the Govr. whether he will pay it out of the "Monsoons" or not—I would thank you to remind him of it.

Yours

J. TEMPLE.  
Larkin to Temple  
Mont. JULY 22, 1839.

Mr. John Temple

SIR:

YOURS of the 20 June I have just rec'd. it was my expectation that you would close with my offer when I agreed to take so much of the leaking out on my own hands—and you to take

the flour, but no, it appears not you say at 50\$ per Bbl & the Bbl returned, you are the loser. Brandy must command a different price your way, from what everyone tells me. how supercargoes buy it there, bring it up & offer it for 40\$ Cash can't say unless it on the Broom principal.

You say if I can prove that one Bbl. was taken on board you have no doubt but Mr P. will make it good to me. I shall not put myself to that trouble; if you wish for prove, I will enquire for you as far as I'm concerned, you might just as well call it 37 Bbls as 27—if Mr. P. said I have acknowledged the rec't of 26½ Bbls. he said what is false, and what Capt. P. knew was false. Capt. P. may have told him so, as I consider the latter a correct man, I think he gained that piece of information that way.—Capt P. read from his memo to me 17 Bbls. and ten in the casks, in two or three days afterwards said 15 Bbls.

I only agreed in my letter to you on the leakage because the Brandy was consigned to me, and I did not want the owner to lose by it, but when I am called on to pay for what I never had now no ones pretends

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# Last of the Missions

**B**ESIDE the busy highway between San Bernardino and Redlands there stands a partly reconstructed group of buildings. They are made of mud. You wouldn't know that, perhaps, when first you look at them, because skilled workmen of Indian blood have finished the walls with a white plaster. Nevertheless the buildings are formed of adobe, from the same soil on which they stand.

Not so long ago the remains of the original structures were hidden by the trees of an orange grove. The walls were crumbling, clod by clod, and returning to the earth from which they rose. Not many persons knew of their existence. Indians, some of the pioneers and a few students of local history were aware of them; but in a few years they would have disappeared and probably have been forgotten except in an occasional footnote.

Yet a century ago these walls and buildings were tangible evidence that a dream was in a fair way toward fulfillment—the dream of a civilized Indian empire extending from the Pacific Ocean eastward into the deserts beyond the mountains. A few more years of working and dreaming and this, one of the best laid schemes, went far awry. Ruins marked the spot where the last of the California mission enterprises had its beginning and its end.

The San Bernardino *asistencia*, as it was known, was built on Rancho San Bernardino, established in the year 1819 at the request of the pagan Indian tribes inhabiting the valley of that name. They wished, they said, to learn agriculture and stock-raising, the material benefits



This front view shows the restoration work on the San Bernardino "asistencia."

## The saga of the San Bernardino asistencia of Mission San Gabriel, now being restored—

By Maurice S. Sullivan

of which were being enjoyed by the Indians in the neighborhood of San Gabriel. Until the mission fathers came into Southern California the aborigines had lived on acorns, berries, roots and such meat as they could get by hunting wild animals; consequently the assured and regular supply of

zanja, or water ditch, was dug from Mill Creek Canyon, through which the Bear Valley road now runs, down through what are now Mentone and Crafton, through the site of the present city of Redlands, westward to what still sometimes is called Old San Bernardino, but more commonly the Mission District. This zanja soon resembled a natural watercourse, and along its banks grew alders, cottonwoods and a variety of other trees. With the aid of mountain water, agriculture began to flourish, so that it was not long before the district became known to the Indians as Guachama, or Guachinga—"Place of Plenty to Eat." Cattle-raising, too, was begun.

After two years Father Mariano Payéras, then *comisario-prefecto* of the missions, and Father José Bernardo Sánchez of San Diego visited the valley on a tour of possible mission sites.

"We gathered the natives together," Father Sánchez wrote in his diary

more palatable food, which followed the organizing of the missions, was an important factor in bringing the natives into the Christian fold.

The padres at San Gabriel readily acceded to the request of the San Bernardino Valley Indians. They thought it would be better for

the Indians of that region to settle down instead of roving in quest of food or fight. They could with less difficulty be converted to the Christian religion. Moreover, with a mission outpost established so far in the interior a means of approaching the more distant and hostile tribes would be provided.

Accordingly, under the direction of the padres, a



Juan Cruz Rocha, a tile-maker from Mexico, is employed to make the adobe bricks used in restoring the "asistencia." In the background is the mansion of Dr. Benjamin Barton, one of the show places of Southern California fifty years ago.

erville Railroad, whose purpose also it was to construct the Great Pacific Railroad. Therefore, in any event, citizens of California were obliged in 1860 to have elected a railroad governor.

While making their way back over the mountains, these potential railroad kings were silently thoughtful, for they had felt the first sting of failure since the beginning of the enterprise. Nevertheless when they arrived at Sacramento, Collis P. Huntington, seemingly more observant than his fellows, announced that on the return trip their stage had passed more than 400 well-laden teams, moving eastward.

By October, 1861, Judah had collected all data regarding the Sierra which might be necessary to combat the onslaughts of any congressional opponents. On the ninth of that month the directors of the Central Pacific Railroad Company of Cali-

fornia held a meeting at Sacramento and ordered Judah to proceed again to Washington. He was directed to distribute pamphlets among the officials of the government, congressmen and financiers of the East, setting forth the findings of his surveys in the Sierra Nevada Mountains and indicating the advantage of the central route.

In compliance with the company's order, Judah sailed on the following day from San Francisco. On the trip he made the acquaintance of Congressman Sargent of California. When they arrived at Washington, Sargent introduced Judah to James A. McDougall, the senior senator from California. McDougall, an enthusiastic railroad advocate, invited Judah to assist him in framing a Pacific Railroad Bill. Judah consented gladly and was given quarters in the Senate Office Building. Soon he had drafted a bill which resembled the Curtis

measure of the previous Congress and, in appreciation of that service and recognition of "the value of his professional advice" to Congress, Judah was appointed Secretary of the Select Railroad Committee of both Houses and he was accorded "privileges of the floor." On May 1, 1862, under the direction of the wily railroad genius the Pacific Railroad Bill, framed in accord with the fondest dreams of the incorporators of the Central Pacific Railroad Company, passed both houses of Congress. It was signed by the Great Liberator on July 1, 1862, with neither pomp nor ceremony.

The Act designated the incorporators of the Central Pacific Railroad by name as the grantees of a vast territorial empire on the public domain and trustees of untold millions of the public money. "Upon the completion of each forty-mile section of the road, five alternate sections of land on each side of

the right-of-way within a limit of ten miles on each side thereof, together with a loan of \$16,000 in thirty-year six per cent bonds of the United States," read the bill.

For a distance of 150 miles east of the western bases of both the Sierra and Rocky Mountain Ranges, this loan was to be tripled, while from the western base of the Rockies, across the Great Basin to the Sierra, this loan was to be doubled. The bill provided also for the creation of a concern known to history as the Union Pacific Railroad Company. That organization was extended similar privileges and directed to construct a line west from the Mississippi or its tributary until it joined with the Central Pacific Railroad Company of California.

Though others are credited with the exploitation of these privileges, it was none other than Theodore D. Judah who had secured them.

## A Deal in Aguardiente

(CONTINUED FROM PAGE 25)

that it leaked out, I must decline trading on such terms.

You need not repeat that you have my signature for payment at 60\$ etc. I also know you have. I thought you would be willing to take good flour at a fair price, in order to continue trade between us.

When I shipt this flour, I sent you a correct list of the weight of each lot, with tare &c, if you have not seen this list, where is it, what business had Capt. P. to take what he liked, and give you the balance. Now I do not know how much he has had, or how much has gone to you. No one has advised me of the flour taken by Capt. P. what ever difference in weight there may be between your weight now and mine, can now be charged to the "Alert's" concern.

I rec'd as I told you 22 1/3 Bbls. supposing all to be full, have sold some at retale, for which you can claim as you say. Have sold some at 55\$ per Bbl Bbl included. Perhaps half is sold. I will overhaul the Bbls, start the Brandy from the bad Bbls to good ones, (I rec'd them in very bad order), make out bill of sales, expenses & duties on all I sold by the Bbl as I sold at 5\$ over market price you must consider I did well, had I had letter of Instructions perhaps I might have done different. I will write to Mr. Isaac Williams to receive the flour, if he will receive it, please weigh it, note what kind of Bbls or bags its in and hand the whole over to him, when done draw on me, by three different Vessels, as they come up for One hundred hides each, this will make Six hundred dollars. Should it come in my way to dispose of the balance of the Brandy at a price to meet your expectations I shall sell it. I do not agree to water it, as I recd. so I will hold it, & soon send you down a/c of sales, in the meantime hold myself responsible to you for the 22 1/3 Bbls of Brandy (Supposedly all full) I mentioned to you one cask remained not full, If you have lost on this Brandy, you will not blame me, it was sent to me,

any how, and without any letters. The offer of leakage I would not have made to you had you been here, yourself.

Should you still hold the flour, I shall consider it sold to you. I have applied to Govt' about your order you will be paid on board ship "Monsoon," I was told, in full. [NO SIGNATURE]

### Temple to Larkin

Angeles, AGUST 8TH, 1839—

Mr Thos. O. Larkin,  
Sir,

YOURS by last mail came duly to hand, you say it was your expectation that I should close with your offer, for my part, I wish that I could have done it and made myself whole, but from the time the Flour was landed in the house at San Pedro, I have wrote you that I thought that the Flour could not be sold at nothing like 2\$ arra. and since that I could not get an offer for it, and now agreeable to your last order have deliv'd the same to Mr. Williams, except 5 lb that was retail'd out of one Bag, you you may rest assured that could I have disposed of the flour, I would gladly have done it & pass'd it to your account, so that we could continue our traffic, so desirable in exchange of articles of the two places, but I perceive that it will be impracticable at present, as wheat is nearly as cheap here as in monterrey—wheat of this years crop is now offer'd at 12 rs fanega new crop in goods and no purchases at that on account of there being no demand in the market—the Flour will be charg'd for the storage at the house at S. Pedro and the freight up for my trouble I shall charge nothing, merely what I have to pay out, as yet have not got Mr. Pryors bill of the storage, the cartage up will be a real on arra. the same as tallow or a hide—I have sav'd the expence of storing the Flour had the ship remain'd long enough in S. Pedro to have sent carts for it, but she merely touch'd and landed the Flour in the house and was off again before I knew

it, or at least when I rec'd news she had arrived, I at the same time heard she had sailed again—Enclosed I send you a duplicate receipt for the Flour del'd to Mr. Williams, with the gross weight of each weigh'd by a new pair of Spanish Steelyards, by which you will see that the Bags fell short in weight 1 arra. 19 lb. gross weight including the 5 lb retail'd out of them—as regards the bbl, I cannot tell how it will come out as I know nothing of the weight of Flour that Capt. Penhallow took. With respect to the aguarte (you say you shall not take the trouble to prove that Capt. P. took on board again a bbl;) as you stated in a former letter that you was knowing to the circumstance, I shall request you to state it to Mr. Park, and if it is the case Mr. Park has agreed'd to settle it; at all events I shall make a loosing consorn of it if I have to loose 2 bbls of it, and only got 50\$ bbl. for the rest.

I never call'd on you to pay for more than you rec'd but as circumstances were such, I offer'd you the lot as you rec'd it, at 1350\$ Casks to be returned, taking into consideration the offer you had made me of 60\$ for what you used, in case I sent any to you—

It appears that we both are going to make bad business, in our shipments—

Business remains dull—Mr. McKinley it is said to be in S. Pedro.

Yours,

J. TEMPLE.

### Temple to Larkin

Angeles, AGOSTO 23RD, 1839—

Mr. Thos. O. Larkin,  
Dr. Sir,

YOURS of the 6th came duly to hand—You say that Dn Juan B. Alvarado wrote me when he made out the letters of Naturalization, now I have not rec'd any communication from him since he has been in Monterrey except a letter the other day brought down by Dn Jose Sepulveda about a debt he has been owing me on a/c of the militia these two years by the last

mail I wrote him last mail my reasons for not taking my letters of Naturalization, some of which were that I had my doubts under the new Constitution whether the Governors had authority to grant them, but at the same time told him I did not pretend to interpret the Laws and that if the Government here was of the opinion that they had powers to grant them I would gladly receive my letter of Naturalization.

The Flour you will perceive by my last was del'd to Mr. Williams as you order'd.

The aguardiente I wish to close, as I am in want of funds to meet my payments to vessels, and therefore to close it, you may take it at your offer of June 4th that is at 50\$ bbl in hides for the 25 bbls you acknowledge to have rec'd subject to my order and free of all expence to me, bbls included, (by which I shall make a dead loss of more than 150\$) and I will try to make Mr. Park pay the other two bbls as he has charg'd me freight on 27 bbls—

I enclose you a note on Jose Z. Fernandez for \$15. 4rs which I wish you to collect & hold it subject to my order—I believe I gave you an account against Dan'l Ferguson for 9\$ at all events he owes me that amt. and I wish you to collect it—

Business very dull—McKinley has pick'd up all the hides & Tallow about the place so that we poor devils on shore stand no chance. Nothing new, except a report the Hinckley has arrived in a Brig with a cargo—

Yours

J. TEMPLE.

### Temple to Larkin

Angeles JANU 10TH 1840.

Mr. Thos. O. Larkin  
Sir,

YOURS of the 16th Nov. was duly received, but I did not answer it, by last mail, being absent at the time. I inclose you Mr. Stearn's b[ill](?) of storage on the Flour which I have paid and charged to



your account together with amount paid for cartage 205 arro Gross @ 1/re = 25.5 which makes the balance due me 202.1 which I should like to have as soon as convenient.—

I do not send you a bill of the cartage as the carter cannot write

—as regards Fernandez' if he has paid Mr. Thompson it is all right, but I doubt it, as Mr. Thompson gave me no Cr. for it when we settled the other day.

Wm. Warren may say what he likes, I repeat I never rec'd any thing on the account I gave you

which is correct. Get what you can of Warren. Pico's account I hope you will be able to collect after a while—

The order in favor of Alexander was rec'd and is all right—nothing new, Business very dull—aguardiente scarce at 50\$ del'd at S.

Pedro—(wish I had my 27 bbl back, could sell it quick). As you say about flour it is the worst speck I made in California to have sent aguar-te to Monterey—

Yours

J. TEMPLE.

## Gentleman Black Bart

(CONTINUED FROM PAGE 19)

or waggery, in his composition.

"It is not believed that he is addicted to the use of liquor and tobacco; is a great lover of coffee; wears about a Number 8 boot; is a great reader, and, when reading without glasses holds his paper at full arm's length. At no place where he has stopped for food has he been looked upon as suspicious in deportment or appearance, and it is most probable that he is considered entirely respectable wherever he may reside.

"He is a sententious talker with waggish tendencies, and has, on several occasions, exhibited genuine wit under the most trying circumstances. Made his headquarters in San Francisco for eight years; made but few close friends, and those of first class respectability; is neat and tidy in dress, highly respectable in appearance, and extremely proper and polite in behavior, chaste in language, eschews profanity, and has never been known to gamble other than buying pools on horse races and speculating in mining stocks."

Notwithstanding the fact that the authorities had an excellent description of Black Bart, their efforts to apprehend him were entirely fruitless for a period of eight years, during which time he took toll from twenty-seven stages. Other road agents there were, men of the hard-boiled, straight shooting variety who flashed briefly into notorious prominence, only to have their meteoric careers cut short by the eternal vigilance and efficiency of equally hard-boiled representatives of the law. Paradoxical as it may seem, this quiet, inoffensive man, so fastidious in dress and chaste in language, plied his profession with so phenomenal a degree of success as to make the best of them green with envy.

There was one occasion upon which Black Bart had a narrow escape. It was in July, 1882, when he held up the stage bound from Laporte to Oroville. Leaping out from behind a clump of shrubbery in front of the horses, he stooped low, as was his custom, in front of the leaders to shield himself, and pointed his gun at the men on the front seat. George Hacket, the Wells-Fargo messenger, took a desperate chance, brought his gun to his shoulder and fired. The horses reared and plunged, and the bandit was thrown aside, unhurt. Then the whip of the driver cracked over the backs of the team, and the stage rolled on, while Hacket fired once more at the baffled man in the road. The shot went wide of its mark, as had the first, and the desperado darted into the dense woods and escaped unhurt.

The following year, destiny played a prank on Black Bart that led to his apprehension. It was the third of November, 1883, when he returned to the scene of his first appearance, on the road between Milton and Sonora, in Calaveras County. The stage from the latter town carried an express box that contained \$4100 in coin, and it is quite likely that Black Bart had, in some mysterious way, learned of its contents. Down the road the stage bumped and careened, when suddenly a figure in a linen duster glided from behind a boulder, and leveled a gun at the driver and messenger. It was no longer a stranger, but the terrible Black Bart that stood before them, and the reputation he had gained was fully as effective in discouraging any thought of resistance as the weapon that menaced them. A few minutes later the thin man in the duster, richer by \$4100, disappeared in the woods.

Immaculate in his attire, Black Bart always wore starched collars and cuffs, even on his long mountain rambles after loot. On this occasion, while opening the express box, one of his cuffs became detached and fell to the ground. Engrossed as he was with the task of opening the express box and making a quick getaway, he failed to retrieve it. A few hours later investigating officers were in possession of the first tangible clue to the identity of the lone robber in the linen duster; for on that cuff was a faint laundry mark, which proved to be an excellent lead for detectives to follow. Surely the laundry that made that mark was located somewhere in the State, they reasoned, and a thorough search should not fail to find it.

On the staff of Wells-Fargo investigators was one Johnnie Thatcher, who had a penchant for solving riddles of this character. To him was assigned the task of tracing that mark to its source, and he proceeded with patience and tenacity that was at last rewarded. Laundries of more than a dozen towns were visited without result; but finally at a small branch laundry on Bush Street, San Francisco, the mark was identified. Thatcher was informed that the owner of the cuff was a thin, sharp-eyed man with a drooping moustache, who always brought his laundry himself and called for it. Beyond this, the manager could give no information; hence it devolved upon the sleuth to await his coming.

For several days, Thatcher kept the laundry under close surveillance, observing all persons who approached it. Then, one morning a spare man with a ragged moustache, carrying a bundle of shirts and collars under his arm, strode up the street toward the establishment. Beyond a doubt it was the

dreaded highwayman who, for eight years had baffled all efforts to apprehend him—Black Bart the poet.

The arrest was an occasion of painful surprise to the city detectives at police headquarters, who were quick to recognize the prisoner as a man they had seen almost every day for years. Indeed, he had frequently taken his meals at Young's bakery on Kearney Street, a favorite restaurant for the headquarters staff, where he had on many occasions sat at the same table with the officers who were searching for him. Further inquiry disclosed the fact that Black Bart, the bandit who during eight years had committed twenty-seven stage robberies single handed, was known in San Francisco as a most commonplace individual. He had taken lodging with a widow in a downtown street, where he was known as Charles F. Bolles—later he confessed that Charles E. Bolton was his real name. According to the widow he was the best of lodgers, quiet and respectable, and quite punctual in paying his room rent.

Black Bart drew a sentence of six years, then considered a severe punishment for a man fifty-five years of age, who appeared to be in poor health. That appearances are often deceiving is attested by the fact that this frail individual had been able to walk through sixty miles of mountainous country in a day!

It is said that Black Bart was a model prisoner, even as he had been a model citizen while residing in San Francisco. With a full allowance for good behavior, he was finally released at the expiration of his sentence. Concluding that the Pacific Coast had become too civilized for road agents, he went to an eastern State, where he resided until his death several years later.

## The Idea Kit

(CONTINUED FROM PAGE 39)

this simple treatment does away with the nuisance.

No harm in trying it, anyway. An oil such as we use in the transmission is quite the thing for this sort of work.

### IV

THE man who once said that automobiles were getting so standardized he could find nothing new to learn about them has not been heard from lately. It seems that he wasn't quite prepared for what one of the manufacturers terms "the parade of the eights" and apparently was blind to the advent of the special knowledge

that is required of owners who seek to master cars powered by engines of the multi-cylinder type, especially the straight eights. Doubtless he would find the experience of one owner of a new car something of a revelation.

The car is a line eight of fine construction but has been driven just far enough to require a little superficial service such as cleaning the breaker points, testing the gas mixture and checking over the valves. Recently it has developed an annoying habit of backfiring when pushed hard on a hill in high gear or when accelerated suddenly.

The owner was all set to conclude that the carburetor mixture needed enriching when he happened to be accelerating more moderately in traffic and observed that the engine did not run evenly. That turned his mind to valve or ignition trouble.

It was easy enough to settle the latter point because with the breaker points cleaned and carefully spaced, and with all spark plugs operating properly, the engine still showed a tendency to run unevenly—but only during acceleration. The backfiring through the carburetor, of course, continued.

So the owner felt that there was something wrong with the valves. He checked over the valve springs and failed to find any that seemed weak. At this writing he is working on the theory that a valve sticks. He reasons that this would have to be an intake valve in order to permit burning gases to blow back through the carburetor and he cannot seem to reconcile this with the well known fact that if valves stick the exhaust type invariably are the first to give trouble because they operate at a higher temperature.

The truth of the matter is this



# The Indian Dead-Fall

B y M . U . B A T E S

IT is several years since ROD AND GUN has published an article on the old-time Indian dead-fall, and as these traps are good killers, cost nothing to build and are very interesting withal, a complete description of one of the most popular of these dead-falls may be of value to your readers. There are several other styles of dead-falls used, such as the "figure four," etc., but that described today is one of the simplest and the most

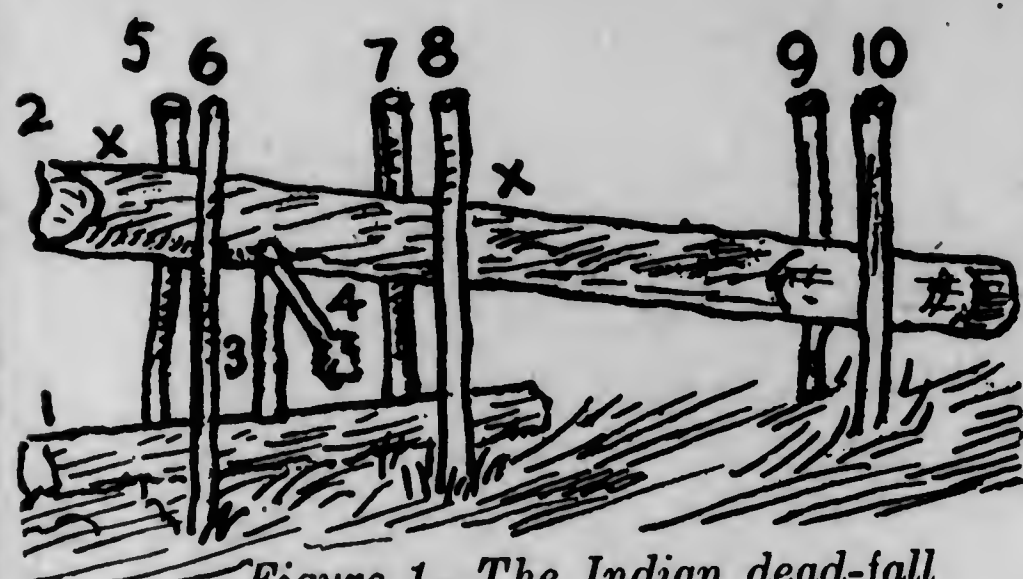


Figure 1—The Indian dead-fall

practical. The young trapper will find it comparatively simple to set and arrange. The illustrations shown herewith will be intelligible to the average trapper, but for those who may not be familiar with these old stand-bys of the trapline we give the following information:

Part No. 1 is the pole upon which the trigger upright rests, and is called the "choke stick"; 2 is the "fall"; 3, the "trigger upright"; 4, the "bait trigger"; 5, 6, 7 and 8 are the "guide sticks" guiding the fall into proper place over choke, and 9 and 10 are two "check sticks" keeping the fall from turning and springing accidentally, and at the same time preventing a captured animal from rolling it, thereby greatly aiding a possible escape.

For mink, etc., the upright should be six or seven inches long, and almost an inch thick; for fisher and other animals of that size, an inch or two longer and of

about the same thickness. The bait trigger is generally about twice as long as the upright, and also of about the same size, but the trapper must use his own judgment to some extent here, as the size of his pen, also the shape of the floor of the pen—whether hilly or concave—will have some bearing upon this. The best material for both triggers is a piece of dry tamarac limb, but almost any other dry limb will answer the purpose. I prefer to build my pens about the same size and style as that used for the ordinary steel trap set, being sure to have enough space on the inside of the pen for the proper working of the bait trigger. As the dead-fall is easy to set off, it is best, when experimenting with the trigger, to place a three or four-inch stick over the choke to save your hands or arms from injury should the trap be accidentally sprung.

The trap is simply made with a few old dry stakes and logs, the only place where any great care is required being in making the upright upon which the bait trigger rests. The success or failure of your trap depends almost entirely on this, and, as will be seen in the illustration, I have placed an arrow calling attention to this particular point.

The upright must be rounded on top—preferably *oblongly* rounded—so that weight of fall is not resting on a sharp pivot, but rather distributed evenly over whole length of oblongly rounded top; the principle of its easy working being the same as that of an ordinary cradle or rocking chair: if the rockers on a cradle were flat, it could not be rocked very easily; being rounded, or curved, however, a very heavy cradle can be rocked by a very small person with comparative ease.

Some trappers do not use any check sticks (9 and 10) on their fall, and I have seen Indian falls without even the outside guide sticks, but where the trapper has

time to make these it is much better to have them. One of the first fisher I trapped by this method might have escaped had it not been for one of these outside guide sticks. This fisher, a trap-shy one, would not approach near the regular doorway of the fall, but after manœuvring around for some time trying to get at the bait, finally squeezed himself in between stakes 7 and 8; and when the fall fell on him he was wedged securely between these two frozen stakes, one on either side of him, the choke stick under him, and the heavily-weighted fall crushing him from the top. Needless to say, he was quite dead when found. The dead-fall in this way is also a more humane way of taking animals than catching them in a steel trap, where they sometimes live for days, slowly dying from cold and starvation. The snowfall being very great in the region where I have trapped for the past several years, I have employed the double check sticks, as shown in cut. These give more freedom of action to the fall, and allow it to find a proper level on the choke, no matter to what level the

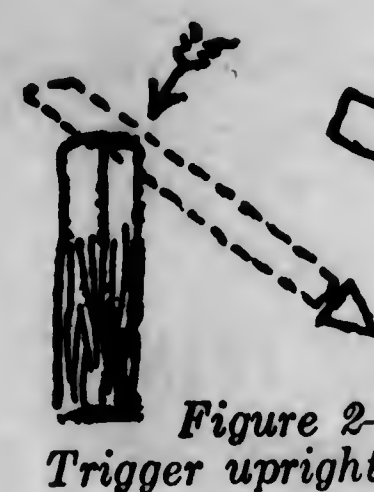


Figure 2—Trigger upright

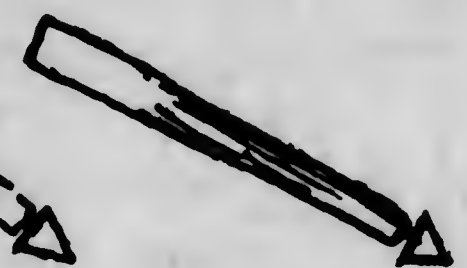
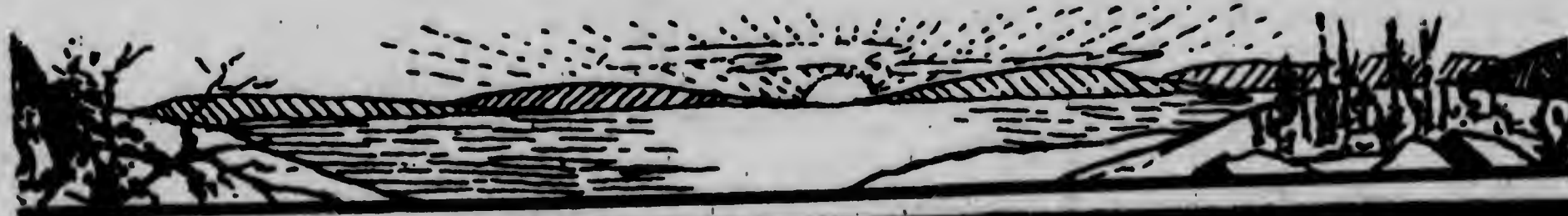


Figure 3—Bait trigger

latter may be raised in later winter due to the deepening snow. In the event of the fall log not being heavy enough in itself to kill the animal set for, an extra log or two may be laid carefully across it at right angles after setting, at the points marked x x, but except in the case of very strong animals, such as the fisher, these will generally not be necessary.





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THESE fine days bring a strong demand for information on trout pools, streams and lakes. The problem in answering such queries is not to find good trout fishing locations to recommend but rather to make a choice from the embarrassment of riches which present themselves in such a "fisherman's paradise" as Canada. The problem is not only to find a good trouting area, but also to meet many other specifications which may be outlined.

For instance, a Syracuse gentleman, who uses the pen name of "Old Waltonian," wants stream fishing for speckled trout where he can live in a house, hotel or cabin and wants it within easy reach of civilization, where he can be reached by messages which have the tinge of urgency. And, he adds, "I hate all manner of flies, mosquitoes, gnats and midges, so what time shall I come to Canada to escape these pests?" At first glance it seems rather a hard bill to fill, but the specifications are not so difficult.

We are suggesting to "Old Waltonian" a choice of three or four locations, any of which will give him sport to be remembered in his trouting dreams. Laurentides National Park in Quebec has the streams and the lakes, it is dotted with cabins operated by the Quebec Government, where guides are established, and it has some wonderful trout locations. The Lake St. John region of Quebec will also fill the bill. Here are preserves such as those of J. Leonce Hamel at Roberval, or Fred Truchon at St. Felicien, where the outfitters have built cabins in the heart of good trout-fishing country. And then, there's Algonquin Park in Ontario, famed far and wide for its speckled trout streams.

Outfitters such as Jack Melville at Lake Traverse Camp and others in the north end of the Park have the facilities for caring for those who wish to live amid civilized comforts and still enjoy out-of-the-way fishing, and on the south end of the Park there is N. T. Clarke at Highland Inn. Further afield is the Nipigon, world-famed and justly so, where, from the cabins of Nipigon Lodge at Orient Bay, the angler can reach some wonderful trout waters. Each of these territories provide big fish for the anglers each season, from three, four and five pounders, to seven, eight and nine pounders taken at times in the different waters. And, remember, the Nipigon holds the record with a speckled trout of fourteen and a half pounds.

As for the fly pests, come early and avoid the rush. Sacrifice a little of the activity on the part of the trout which

June first it is better, and when the hot weather brings out the fly hatches in great numbers, the fishing is even better still. However, if you would escape the flies, "Old Waltonian," beat them to it. You may sacrifice the fishing a little bit, but in the rapid waters of the streams in any of the territories above named, you will find that *Salvelinus Fontinalis* will rush forth to try conclusions with a wet fly or a fly and spinner any time after the opening of the season.

## N.B. Issues New Moderate- Priced License for Non- Resident Fishermen

New Brunswick is to issue for the first time this year a non-resident salmon and trout tourist seven-day license, at the extremely low rate of \$5.50.

Announcement regarding the provisions of this license is made by the Minister of Lands and Mines. The moderate price, together with the privileges which are accorded the non-resident under the terms, is bound to make this license one of the most popular ever issued to tourist fishermen.

Upon the payment of \$5.50, the license holder is permitted to fish in certain trout and salmon waters for seven days. Furthermore, the license grants the same fishing privileges to the wife of the lease holder, as well as members of his immediate family, sons and daughters. In brief, license permits an entire family to fish in certain salmon and trout waters in New Brunswick for a period of one week for the one payment of \$5.50.

The former three-day salmon and trout license, which cost \$5.00, has been abolished this year, and the more liberal \$5.50 license, for seven days, takes its place.

It is pointed out that the new license does not apply to Restigouche waters or leased waters, such as those advertised at the recent sale in Fredericton, or the waters within the game refuges, or to the open water on the Northwest Upsalquitch. However, there is ample scope for the ardent trout or salmon fisherman who wants to utilize this license on many miles of trout and salmon rivers throughout the province.

## Riding Mountain Park Golf Course

Riding Mountain National Park, Manitoba, now has a nine-hole golf course, which has been brought up to good playing condition. It was very popular during the past summer with both residents and transients in the park. An additional nine



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SCIENCE: A Weekly Journal devoted to the Advancement of Science, edited by J. McKEEN CATTELL and published every Friday by

## THE SCIENCE PRESS

New York City: Grand Central Terminal  
Lancaster, Pa. Garrison, N. Y.  
Annual Subscription, \$6.00 Single Copies, 15 Cts.

SCIENCE is the official organ of the American Association for the Advancement of Science. Information regarding membership in the Association may be secured from the office of the permanent secretary, in the Smithsonian Institution Building, Washington, D. C.

## THE MUSEUM OF THINGS VERSUS THE MUSEUM OF IDEAS<sup>1</sup>

By Dr. WILLIAM K. GREGORY

AMERICAN MUSEUM OF NATURAL HISTORY

THERE was once a museum man named G. Browne Goode, who said in effect that a museum should be an exhibit of ideas, set forth by labels and illustrated by well-chosen specimens; but this prophet of a better day has been dead a long time and museums of natural history have been very slow to give his principle a fair trial.

History repeats itself. In the eighteenth century, when the young science of zoology was just beginning to get on its feet, there were two schools of zoologists: the first, reacting against the zoologic myths and fables of the Middle Ages, professed itself as the humble recorder of facts and is therefore referred to as the School of Facts (*L'Ecole des Faits*). A work entitled

<sup>1</sup> Address before the Academy of Natural Sciences of Philadelphia, May 25, 1936.

*"Memoires pour servir a l'Histoire Naturelle des Animaux,"* published at the Hague in 1731, was especially noteworthy because it illustrated the status and ideals of natural history in France during the reign of Louis XV. It records the results of a series of dissections performed upon animals from the Jardin du Roi, by a committee of the Royal Academy of Sciences. The work is animated by the spirit of the *"école des faits"* and illustrates both the search for absolute certainty and the reaction against all theory and generalization—tendencies which were characteristic of the science of the period. The authors remind us that natural history had long been burdened with error and overgrown with fanciful speculation. They had proposed to themselves the task of accumulating a body of anatomical facts, each of which was to be



attested and authenticated by the whole committee. Each detail of their figures likewise was to be attested, after having been drawn by one of their own members, by a hand guided by science as well as by art. And they "will not," for example, "affirm aught of Bears in general" but will say only that "a Bear which we have dissected had this particular conformation." They profess to hope that upon such a foundation of concrete facts some Aristotle of the future may build a secure philosophy, a veracious natural history.

Adherents of the School of Facts are apt to be rather superior in their dealings with their opponents, the advocates of the School of Ideas. And it must be confessed that they frequently know a great deal more about their subject than their opponents do. The great Cuvier, for example, who was the leader of the School of Facts in the late eighteenth and early nineteenth centuries, had no difficulty in citing facts which easily refuted the ingenious idea of Geoffroy Saint Hilaire that a vertebrate animal was merely a highly disguised insect swimming on its back! And later on, the "Circularians" and the "Trinitarians" of the School of Ideas were only too ready to tell what the Creator had in his mind when, as they vainly imagined, he created series of forms in circles or triangles. It was on the whole a healthy reaction against moonshine in zoology which led to the almost complete triumph of the School of Facts.

This triumph, however, entailed its penalties. For example, the ideal of human anatomy became the compilation of many hundreds of pages of descriptive detail, at first without a single clue from either embryology or comparative anatomy. In anthropology the passion for facts led to the amassing of millions of measurements—most of which were eventually condemned as inexact by anthropological popes of later times. In paleontology the Particularists, or modern successors of the School of Facts, love caution almost as much as acquisition. Industrious as ants and productive as bees, they demand more and more carloads of facts before attempting the elaboration of any ideas. They are willing indeed to declare a long moratorium upon theories, which are often produced by stay-at-home drones.

In many branches of zoology Theodore Gill's dictum that "analysis must precede synthesis" has had curious results. Species were broken up into smaller units, the old species were promoted to be genera, the genera became subfamilies, the subfamilies attained the rank of families, families were stepped up into suborders, suborders into orders, and so on. And when the uncivilized tribes of the Myxomycetes or slime fungi were formally annexed to the kingdom of animals, only a taxonomic dictator was lacking to promote said kingdom into an empire.

Another curious result of the labors of the industri-

ous School of Facts is that the supreme fact of evolution is constantly being overlooked just because the myopic workers can see only the smaller bits of it which they have hacked off from the vast tree of life.

Meanwhile, the doctrine of polyphyly, or the co-existence of numerous independent lines of descent from some very ancient common ancestor, has seemed to some investigators to have transformed the old-fashioned or branching family tree into an indefinite number of nearly parallel lines fading off into the bottomless abyss of geologic time. In short, analysis has so far outrun synthesis that in some cases we might almost as well adopt an alphabetical arrangement of animals as a substitute for a real classification based on natural relationships. Thus the Particularists are largely to blame for the existence of the odious but well-turned phrase that a natural scientist is a man who knows more and more about less and less. Of course he might retort that some folks know less and less about more and more.

Some of the greatest museums in the world include tens of thousands of square feet of exhibition space. Even if there is an average of only one named thing in each square foot, how soon will the visitor be lost in the wilderness of things with names! All those who know their Robert Louis Stevenson will recall his quaint verse:

This world is so full of a number of Things,  
I'm sure we should all be as happy as Kings.

The visitor to many of the old-fashioned museums of natural history, after wandering through hall after hall full of stuffed animals, of dusty birds mounted on little wooden stands and thousands of insects stuck on pins, might well be tempted to paraphrase Stevenson and say wearily:

This Museum is so full of so many Things,  
I feel as depressed as a bird with clipped Wings.

As long as an exhibition hall is conceived to be primarily a dictionary for reference, the curators will naturally try to make it as complete as possible and will not only exclude everything not directly pertaining to the dictionary function but will cram their shelves to the limit of capacity. Under such circumstances the poor wight, or average visitor, soon becomes "fed up," as he phrases it, and only pauses a few seconds here and there as one does when idly turning over the pages of Webster's Unabridged. The experimental psychologists, however, with stop-watches in hand, have proved that there is just one thing, in even the worst hall, which will almost invariably quicken the tired visitor's pace when first he catches a distant glimpse of it. That thing is the exit!

There are other aspects of exhibition in which the old-fashioned Museum of Things was palpably defi-

cient. Take, for example, the matter of human interest. In a certain museum there is a huge canoe hollowed out of a gigantic tree by the Haida Indians of the Northwest coast. The canoe contains a number of human figures, some of them wearing masks and evidently dressed in ceremonial costumes. The label with this exhibit notes that the people in the canoe are conducting a potlatch, or ceremonial visit, including the chief and his party, to the people of another village. But the human values, the motivation of the event, are not referred to. Why is the chief making this visit? Is it only a decent exchange of civilities? No; it is his supreme opportunity to vaunt himself, to cover his rival, the other chief, with shame and confusion. How will he do it? He will start with fair speech and compliments. Then, warming up to his work, he will begin making presents, one after another, until it hurts both the giver and the recipient.

"Here are a baker's dozen of these beautifully decorated boxes, piled higher, chief, than your house! Here are these superb woollen blankets, far better than any *you* have ever slept under. Here is this magnificent porcupine quill work! You know you can't equal it. Here's a perfectly sound slave.—Stand up, wretch, and show yourself! We'll use him as a target in this afternoon's sports! [Great applause.] But here's the supreme gift—my No. 1 wife! (Now top that, you miserable insect!)"

Meanwhile please try to imagine the secret feelings of the poor village taxpayers on both sides when they realize next day that they and they alone will have to pay for all this extravagance!

The old-fashioned museum was of course by no means the only educational institution in which human values and interest were studiously ignored. As a freshman student of zoology in a well-known college, I could not for a long time see much use in the endless array of anatomical terms which the student was expected to attach to the drawings of his dissections. "What," I asked my instructor at last, "is the use of all this?" But he, being one of the recent initiates, smiled in a superior way and replied: "Mr. Gregory, that is a question we never ask in zoology." I knew there must be something wrong with the answer, but it took me some years to find out what it was. One fault was that the element of human interest was at a minimum just so long as each unknown part of an earthworm's anatomy had an equally unknown name attached to it. What indeed *was* the use of learning to associate two sets of apparently useless things?

I might have been told that the study of the anatomy of the earthworm was useful because it would help me later to understand human anatomy; or I might have been shown the earthworm as a wonderful living mechanism which conducts its boring operations with an efficiency that might well shame a modern engineer;

or why did not my instructor read to us Darwin's fascinating account of the work of the earthworm in preparing the soil for the farmer? But there was only the smelly earthworm, half ruined in my dissecting pan, with little blobs of messy parts and long names to be attached to them! Is it any wonder that the School of Things in zoology nearly drove me into the ministry?

So too in paleontology I was early told by a museum curator that the famous fossil skeleton of *Phenacodus primaevus* Cope was worth more than all the theories that would ever be based upon it. Again I knew that there was something wrong with the answer, but what was it? I should say now that the value of any museum specimen is only a potential or estimated value so long as no human being gets any scientific ideas from it. The specimen begins to function as an object of science only when and in so far as it serves as a basis of scientific knowledge.

But not even in museums of natural history have the Particularists succeeded in burying every idea under a thick deposit of minute details. The Generalizers have always insisted that the aim of science is not only to collect, catalogue, identify and exhibit things, but to find out and to expose, so far as humanly possible, why things are as they are and according to what rules events are shaped. The Generalizers have also clung to the opinion that even an imperfect and temporary explanation or hypothesis is much better than none at all, provided, however, that it be clearly recognized as a stage in the development of men's ideas as to the causes of things.

However, nothing is simple (at least in museums) and there are perhaps as many difficulties as there are things. For hundreds of millions of years nature has been turning out new things, new situations, merely by combining old elements in different proportions at different times. Also, since new events and things are seldom if ever the products of single causes, each simple thing to-day has lines of antecedent causes and conditions which spread out in a network of infinite extent and age. In other words, since there have been myriads of individual factors that have contributed to even the simplest events of to-day, the world itself would not be big enough to hold the books that might be written thereon, nor the earth wide enough for an adequate exhibit thereof.

But because explanations may not be final and complete, must the visitor be left to bump around aimlessly and without clue or guidance until, wearied by contact with unmeaning objects and long words, he quickens only at the sight of the exit?

Department stores, movie directors and the Sunday papers often show a great deal more about the art of exhibition than do many old-fashioned museums.



For one thing, the window-dressers in the better department stores long since discovered the fundamental importance of unity, emphasis and coherence, and they have also hit upon the high value of the rest, or interval of empty space, for the bewildered eye.

Ineffective public instruction is exemplified when great crowds of people merely drift by an exhibit and never think of it again. Effective public instruction is achieved when people stop, look, read, mark, learn and inwardly digest, the exhibit, so that it adds permanently to their stock of useful knowledge. But in order to maintain public instruction in a state of vitality there must be a constant stream of new discoveries, new scientific material, new exhibits, and there must be a perfect cooperation between the producers of scientific values and the teachers thereof.

Fortunately the trustees and staff of the Academy of Natural Sciences of Philadelphia some years ago discovered that something very radical must be done to an old-fashioned museum in order to preserve and harmonize its functions as a treasury of scientific material and as a center of research, with its function

as an active teacher of scientific principles. Already great progress has been made, as any one can see by visiting the beautiful galleries of mammals, or the striking individual exhibits already installed in the hall of geology and minerals. Moreover, the academy has never failed to realize that its primary function is that of an active research and publication center, so that even in the worst days of the depression it continued to publish the results of investigations by the preeminent scientists who are the real fount of its power and prestige.

The plans set forth in the brochure entitled "*Frontiers*" would, if means could be found to carry them out, place the Academy of Natural Sciences of Philadelphia in the forefront of those institutions which are opening up and exploring the vast fields of science and education. The academy can be enabled to carry out this splendid program of public instruction in the principles of science only if the citizens of Philadelphia realize its great value to them and help to bear the cost of transforming a Museum of Things into a Museum of Ideas.

## THE PHYSICIAN AS ANTHROPOLOGIST

By Professor T. WINGATE TODD

WESTERN RESERVE UNIVERSITY AND BRUSH FOUNDATION

THE sudden and untimely death of my distinguished colleague, Dr. Roger Griswold Perkins, floods my mind with memories of significant accomplishments and fills my heart with gratefulness for creative insight and the enthusiastic promotion of an ideal which bids fair ultimately to rank among the most practical of dreams which ever took shape within the fertile brain of man.

To the American familiarized even to the point of commonplace with the rapid growth of cities those basically constructive measures which make congested areas fit for habitation are too often taken for granted. But to one like myself, born and bred in the Old World, the miracle of health in such a neighborhood must always stand as the most striking of the gifts to mankind by men whose ambition is fulfilled in service without the mead of praise. Here was the man who took the typhoid out of Cleveland water; built up the city's division of health; insisted on the proper inspection of food; the man behind the Cleveland Health Council. Yet on his retirement this metropolitan area of three million souls, each one of whom owes to Dr. Perkins security of health, could let him slip quietly away without a word of acknowledgment to his homestead in Rhode Island, so sated are our people with service and security.

This present testimony, however, draws attention to a still more fundamental contribution to human wel-

fare than making life safe for a legion of fellowmen. It happened that, by the inscrutable working of destiny I, who had found my greatest thrill, under the guidance of Sir Grafton Elliot Smith, in delving into the mortality statistics of the ancient Egyptians, while this was still possible pending completion of the Assouan Dam, was thrown into professional association with Dr. Perkins, who, like myself, had been too busy with the daily round to formulate the principle which was the mainspring of endeavor. It was obvious, however, from these studies on the imperishable remains of an early people that no adequate time-table of the impact of life upon humanity could be constructed except in a center where official enlightenment makes possible the serial study of human beings in life and death. Cleveland was the one community where this was possible and Perkins the one man who could make that study effective. His accession, in 1911, to the chair of hygiene and preventive medicine the year before my arrival and his growing prestige in municipal and county management made possible the study which we both had planned. His guidance and diplomatic tact made possible the substitution of a Permanent Morgue for the Potter's Field, and that permanent morgue to-day comprises 3,000 of our fellow townsmen, most of whom, recruited from our local hospitals, brought with them the essential records for analysis



years) on the problem of the individual versus the species in modern studies of avian behavior. Another feature was a number of excellent motion pictures in natural color, revealing a great advance over previous natural history photography. On Friday, October 21, there was an all day excursion to the Patuxent Wild Life Research Refuge operated under the auspices of the Biological Survey, while on Saturday morning members inspected the new buildings and collections at the National Zoological Park.

The 1939 meeting is to be held in the San Francisco Bay region, California.

## Obituary

VICTOR KNIGHT CHESNUT, for many years a chemist with the Department of Agriculture, died suddenly on August 29 at his home in Hyattsville, Md., at the age of 71.

Born in Nevada City, Calif., Mr. Chesnut studied at the University of Chicago and at George Washington University. He became an assistant professor in chemistry at the University of California in 1890 and was assistant botanist in charge of poisonous plant investigations of the Department of Agriculture from 1894 to 1904. He was made an assistant chemist in the Division of Drugs in the Bureau of Chemistry of the Department of Agriculture in 1907 and served until 1916, when he was made an assistant chemist in the Phytochemical Laboratory. From 1924 until his retirement in 1933 he was an associate chemist in the Bureau of Chemistry and later in the Food and Drug Administration. Mr. Chesnut was widely known as an authority in his field, and contributed frequently to magazines and scientific publications.

A fellow in the American Association for Advancement of Science, Mr. Chesnut was active in the American Chemical Society, which he joined in 1895; he served as president of the Washington Section in 1901. He was a member of the Washington Academy of Sciences (vice president 1901), the American Horticultural Society, the American Civic Association and the Cosmos Club.

GUY N. COLLINS, principal botanist in the Division of Cereal Crops and Diseases of the Bureau of Plant Industry, U. S. Department of Agriculture, died on August 14, 1938, of endocarditis at his home at Lanham, Maryland. Mr. Collins was born at Mertensia, New York, on August 9, 1872. He attended Syracuse University but terminated his college career as an undergraduate in 1895 to join a survey expedition to Liberia for the New York Colonization Society. On his return to the United States in 1898 he spent a few months on the Florida Keys as a free lance botanical collector. Shortly after the close of the Spanish American War he joined the staff of the U. S. Department of Agriculture as Assistant Botanist in the Office of Botanical Investigations and Experiments. The remainder of his life was spent in the service of the Department of Agriculture, his assignments and titles undergoing many transformations.

His first expedition to the American Tropics was in company with O. F. Cook, exploring the newly acquired territory of Puerto Rico and their expedition resulted in the still standard publication "Economic Plants of Porto Rico." Returning from Puerto Rico Mr. Collins entered the Seed Laboratory of the Division of Botany and there devised apparatus for subdividing large lots of seeds into samples for germination and purity tests.



He never lost interest in the statistical problems of seed testing, an interest manifested many years later in the publication "The Application of Statistical Methods to Seed Testing." Many expeditions to the American Tropics followed his trip to Puerto Rico and from one of these came the introduction of the Guatemalan "hard shelled" avocado which has been utilized extensively in developing the commercial varieties of this fruit grown in Florida. While on another of these expeditions to Southern Mexico, accompanied by C. B. Doyle, he collected the Acala variety of cotton now grown extensively in California and the Southwest.

The last thirty years of his service were devoted to a study of inheritance in Indian corn and to the application to that study of biometrical methods without which, he was convinced, no adequate conclusions could be reached. He was among that early group of investigators whose work provided the foundation on which rests the present popular system of producing commercial corn crops from hybrid seed. His studies of inheritance in maize led quite naturally to an interest in the origin of this crop and his articles on the phylogeny, agricultural history, and origin of maize are definite contributions ranking equally in importance to his contributions to maize heredity. His insistence on the use of biometry not only on his own data but on those of his associates in the Bureau of Plant Industry compelled him to contribute much of his time to other investigators, at that time feeling their way through the labyrinth of statistical methods. In this manner he made contributions to much of the research of his colleagues.

Mr. Collins was highly regarded for his absolute honesty and for the objectivity with which he approached all problems whether of a personal or scientific nature. In his death biological science has lost a great spirit always fired with enthusiastic curiosity on scientific questions and one tempered with a reasonableness that can come only with the highest intellectual development.

Mr. Collins was a member of the Washington Academy of Sciences, the Botanical Society of America, the Botanical Society of Washington, the American Genetic Association, the Genetic Society of America, the National Parks Association and the Cosmos Club.

EARL BALDWIN MCKINLEY, bacteriologist, geo-pathologist, and administrator, was lost when the Hawaii Clipper disappeared, 2:11 P.M. (Guam time), July 29, 1938, some six hundred miles southeast of Manila. Dr. McKinley was on his way to the Orient to carry out serological tests bearing on the etiology of leprosy and he was engaged, while en route, with Mr. Fred C. Meier, of the Department of Agriculture, in making studies of the flora of high altitudes, work in aerobiology sponsored by the National Research Council.

Dr. McKinley was born September 28, 1894, at Emporia, Kansas. His university and professional training were received at Michigan, from which he received the degrees of A.B. and M.D., and as a Fellow of the National Research Council at the Pasteur Institute of Belgium at Brussels under the renowned Jules Bordet. McKinley received his M.D. degree in 1922. His first academic positions thereafter were held at Baylor University. Here he served one year as Assistant Professor of Medicine and one year as Professor of Hygiene and Bacteriology. Then came his year at Brussels, following which he was for a year Assistant Professor of Bacteriology and a year Associate Professor of Bacteriology at Columbia University. In 1927 he went to the Philippines as a Field Director of the International Health



# Bessels

The following notice of Dr. Emil Bessels has been supplied by Dr. 92  
Dall:

Dr. Emil Bessels was born in Heidelberg, June 2, 1847. Educated at the University, and securing the degree of doctor in medicine, he was more disposed toward science and belles-lettres than to the practice of his profession. Being in easy circumstances he was enabled to follow his natural bent, and for a time was a student in zoology under Van Beneden, and an assistant of Krauss at the Naturalien Cabinet, or Royal Museum of Würtemberg in Stuttgart. He became interested in Arctic discovery, and his first essay in this direction, under the encouragement of Petermann, of Gotha, was the well-known voyage of 1869 into the sea between Spitzbergen and Nova Zembla. By his observations on this journey he traced the influence of the Gulf Stream water east of Spitzbergen and added much to the scanty knowledge of this region then available. In 1870 he was called to the field as military surgeon, rendering services in the hospitals, which brought him a public commendation from the Grand Duke of Baden. In 1871 he came to America at Petermann's suggestion to join Hall's Polar Expedition as naturalist and surgeon. Most of the scientific results of this voyage were the fruit of his personal efforts. After the rescue of the survivors he returned to America, where for some years he was busy at the Smithsonian Institution in preparing for publication the scientific results of the voyage, one of the most striking of which was the proof first brought out by him of the insularity of Greenland, which he deduced from the tidal observations secured on the expedition. In 1876 his work was printed in quarto, under the title of "Report on the Scientific Results of the Polaris Expedition." Three years later he published through Englemann, at Leipzig, a German narrative of the expedition, illustrated largely from his own very artistic sketches. He projected a work on the Eskimo, to which he devoted much labor. An ethnological voyage undertaken on the United States steamer *Saranac* to the northwest coast of America was prematurely terminated by the wreck of that vessel in Seymour Narrows, British Columbia. He returned to Washington, where he prepared several contributions to Arctic and zoological literature. Through an unfortunate fire at his residence he lost his library, manuscripts, and collections in 1885, and subsequently returned to Germany, where he settled at Stuttgart. Here he was engaged in literary pursuits, the study of art, and in geographical instruction. He died after a short illness, March 30, 1888, and his remains were interred in the Cemetery, at Heidelberg. 93

Smithsonian Rept. for 1888. p. 92-93. 1890.



Biographies and obituaries

Clippings from American Anthropologist.

Folder 2



*Am. Anthropologist, vol. 8, 1906.*

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### **Alfredo Chavero**

Señor Licenciado Don Alfredo Chavero died in the City of Mexico, October 24, 1906.

Señor Chavero was beyond question the dean of Mexican archeologists; but not only as an archeologist was he prominent—he was a lawyer of eminence, an active politician, a man of affairs, a brilliant orator, and a successful writer.

Born in the City of Mexico, February 1, 1841, Alfredo Chavero began the active practice of law in his native city at the early age of twenty years, and in the year of his majority, 1862, was elected a deputy to Congress. He was a liberal in politics, and was associated with President Juarez during the period of the French invasion of Mexico under Maximilian. After the fall of the empire, in 1867, he entered journalism, thus beginning his career as a man of letters. Not being in sympathy with the administration of President Lerdo de Tejada, he went to Europe, returning when Lerdo de Tejada's term of office ceased, and serving under the new administration as sub-secretary to the Minister of Foreign Affairs. In 1871 he became governor of the Federal District, and for many years, until his death, was a member of the Chamber of Deputies, over which he presided at various times. He was long regarded as the most brilliant speaker in that body.

Notwithstanding the demands of his political offices, Señor Chavero found time to devote attention to numerous educational, administrative, and judicial organizations. He was professor of administrative law in the School of Commerce, a member of the commission that formed the commercial code, a director of the School of Commerce and of the College of Peace, Comptroller of the National Bank, a member of the permanent Arbitration Board at the Hague, a member of the Pan-American Congress held in

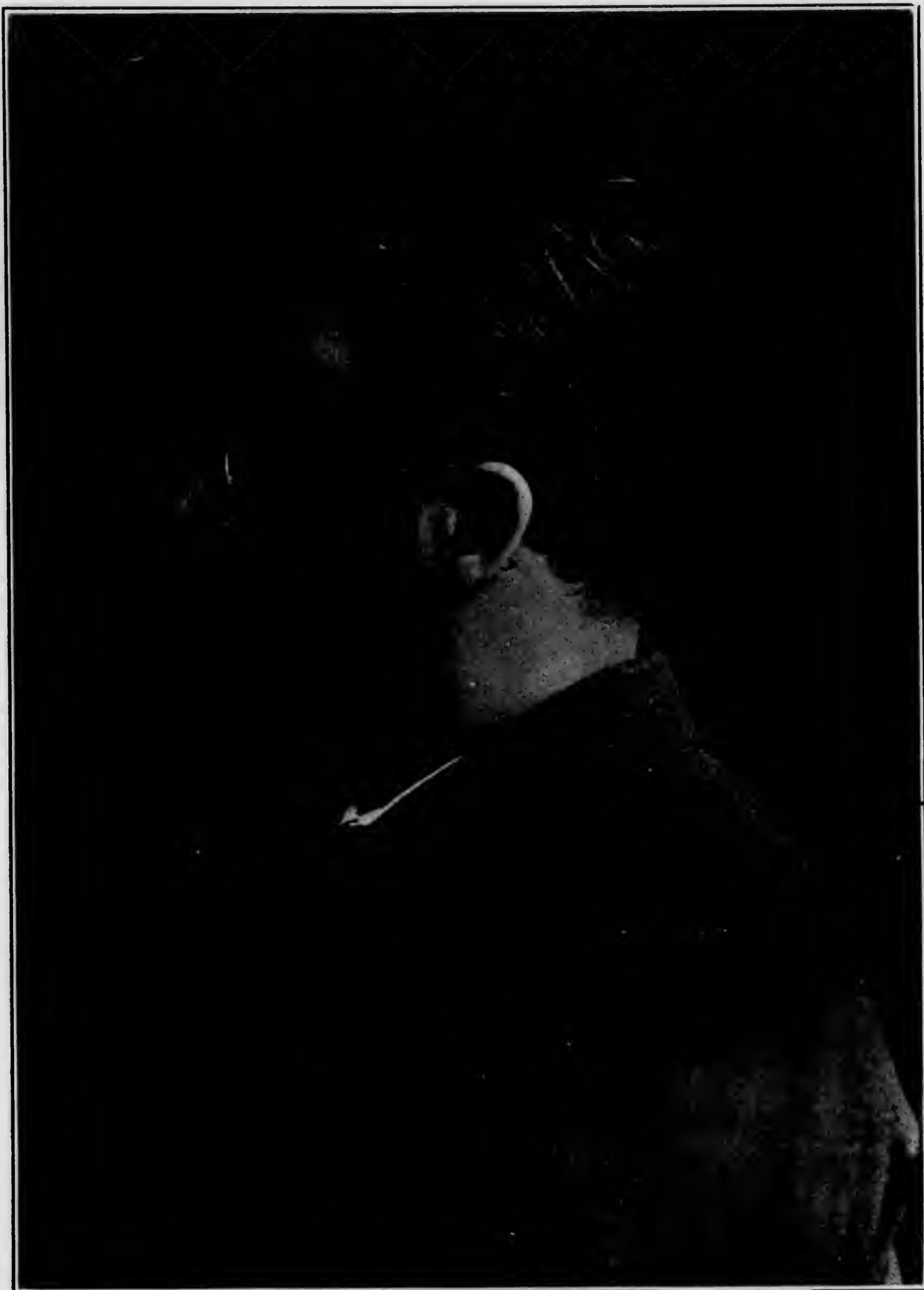


Mexico, the perpetual secretary of the Statistical and Geographical Society of Mexico for more than forty years, the director of the National Museum of Mexico in 1903, and the holder of various other positions of national importance. Señor Chavero was a founder of the American Anthropological Association, and a member of the editorial board of the *American Anthropologist* from the time it became the Association's official organ. He was also a member of the Société des Américanistes de Paris and of the American Antiquarian Society, and a corresponding member of the Real Academia Española de la Historia. He was president of the Mexican delegation to the Thirteenth International Congress of Americanists held at New York in 1902, and was one of the speakers on the subject of archeology at the International Congress of Arts and Sciences held at the Saint Louis Exposition in 1904. On both of these occasions he made many warm friends in this country by his genial and courteous manner.

Notwithstanding the many duties which Señor Chavero was called on to perform as a leading man of affairs, he found time to exercise his talent as a historian and an archeologist, and even to enter the field of dramatic literature. He was among the first students of modern times to make a careful comparative study of the Mexican calendar system, and it is due to his activity that the works of Duran, Ixtlilxochitl, and Camargo have been published. The following is a fairly complete list of Señor Chavero's anthropological publications:

- Calendario Azteca. (Appendix to Diccionario Geográfico Estadístico de la Republica Mexicana, Tomo III, entrega 108, Mexico, 1875.)  
Calendario Azteca: Ensayo Arqueológico. 2d ed., Mexico, 1876.  
Sahagun, Estudio. Mexico, 1877.  
Explicacion del Códice Geroglífico de Mr Aubin. (Appendix to Historia de las Indias de Nueva España, by Duran, Tomo II, Mexico, 1880.)  
La Piedra del Sol: Estudio Arqueológico. (Anales del Museo Nacional, Mexico, 1880-1901.)  
Mexico a Través de los Siglos. Tomo I, Historia Antigua y de la Conquista. Barcelona, 1884.  
Antigüedades Mexicanas. (Text, with an explanation of the Lienzo of Tlaxcala, Mexico, 1892.)





Alfredo Chavero

Los Dioses Astronómicos de los antiguos Mexicanos. (Appendix to Interpretación del Codice Borgiano, by J. L. Fabrega. Anales del Museo Nacional, Mexico, 1900.)

Pinturas Jeroglificas. Two parts. Mexico, 1900-01. (The original codex reproduced by Señor Chavero in Part 2 was presented by him to the American Museum of Natural History at the time of meeting of the International Congress of Americanists at New York, 1902.)

Calendario ó Rueda del Año de los Antiguos Indios. Estudio Cronológico. Mexico, 1901.

Calendario de Palemke: Los Signos de los Dias. Mexico, 1902.

Palemke Calendar: The Signs of the Day. (Transactions International Congress of Americanists, New York, 1902.)

Calendario de Palemke: Los Signos de las Veintenas. (Anales del Museo Nacional, Mexico, 1903.)

Apuntes Viejos de Bibliografía Mexicana. Mexico, 1903.

El Monolito de Coatlinchan. (Anales del Museo Nacional, Mexico. Also separate edition, 1904.)

Bibliographic Notes on Morfi, Vega, Tovar, Veytia. (Anales del Museo Nacional, Mexico, 1903, 1904, 1905.)

*Editor of —*

Obras Historicas de Don Fernando de Alva Ixtlilxochitl. Two volumes. Mexico, 1892.

Historia de Tlaxcala, by Camargo. Mexico, 1892.

American students always found it a great pleasure to meet Señor Chavero, especially in his home in Mexico, surrounded by the books relating to Mexican history which he loved and knew so well. In his death American archeology and early history have lost one of their oldest and most devoted workers.

MARSHALL H. SAVILLE.



## Obituary

Am. Anthropologist  
Dec. 1924.

### ANTHROPOLOGICAL NOTES

GEORGE HUBBARD PEPPER

IN THE PASSING OF George Hubbard Pepper at Roosevelt Hospital, New York City, in the morning of May 13, the Museum [Museum of the American Indian, Heye Foundation] has suffered the loss of one who had been longer associated with the Director in his endeavors to bring together the collections that formed the nucleus of the Museum than any member of its scientific staff, while to the Director himself Mr. Pepper's death is not alone that of an associate but of a staunch and gentle friend.

Mr. Pepper was born at Tottenville, Staten Island, February 2, 1873, and from boyhood evinced a keen interest in American archaeology, inspired by the presence of sites of Indian occupancy in the immediate neighborhood of his parental home. After his graduation from the local high school in 1895, he was encouraged by the late Prof. F. W. Putnam to undertake special studies at the Peabody Museum of Harvard University, remaining in Cambridge for that purpose during the winter of 1895-96. In 1896 he was appointed assistant curator of the Department of the Southwest in the American Museum of Natural History, from which time until 1900, during the summer months, he was in immediate charge of the excavation of the prehistoric ruin of Pueblo Bonito in Chaco cañon, New Mexico, conducted under the Hyde Exploring Expedition, the results of his observations in that interesting field being published in 1920 by the American Museum.

In pursuance of his ethnological studies, Mr. Pepper made a reconnaissance of all the occupied pueblos of the Southwest, in 1904, at the same time continuing a study of the technique of Navaho weaving, commenced while he was engaged in the Pueblo Bonito exploration. Retaining his position in the American Museum, Mr. Pepper later in the same year continued excavations in the *yacatas* of the Tierra Caliente of Michoacan, Mexico, in the interest of what had become known as the Heye Museum, and in 1907 he accompanied Prof. M. H. Saville, of Columbia University, on an expedition for the same Museum, whose object was the elucidation of certain archaeological problems in the Province of Manabi, Ecuador.



Dr. Marsh, the discoverer of the "White Indians" of Darien, addressed a number of the anthropologists on the subject of his travels; at the end of the meeting he presented his case at a public session. Drs. Haddon and Shrubbsall and Mr. Buxton, who saw the three "White Indian" children near Prescott, Ont., were of the opinion that they might fairly be considered as coming within the range of the term "albino." Dr. Christie, the pathologist, dissented from this view and seemed inclined to explain the whiteness of the skin as a progressive pathological condition.

Special features of interest to the members of the Section were a visit to the Royal Ontario Museum, where Mr. Currelly showed them the splendid Chinese collections installed under his care; and a series of three selected Canadian Indian exhibits, illustrating art, copper, and pottery, which had been sent down from the National Museum at Ottawa. The exchanges, both scientific and personal, between the British, American, and Canadian anthropologists were cordial and stimulating. It seemed to be the general consensus of opinion that the sectional meeting was a decided success.

E. SAPIR

In 1909 Mr. Pepper severed his connections with the American Museum and was appointed assistant curator in the Department of American Archaeology in the University Museum at Philadelphia, a position which he retained until the following year, when he became permanently attached to the corps of workers which the writer had enlisted for building the collection that developed into the Museum of the American Indian, Heye Foundation.

Mr. Pepper devoted his entire service to the interests of this institution until the end. In 1914, in conjunction with the Director, he excavated a Munsee cemetery of the historic period near Montague, New Jersey, the results of which have been published by the Museum. In the following year he was associated with the Director and Mr. Hodge in the exploration of the Nacoochee mound in the old Cherokee region in Georgia, the results of which have been likewise published by the Museum. In 1918 he returned to the Pueblo field in New Mexico to aid in the Hawikuh investigations of the Hendricks-Hodge Expedition of the Museum. In all of his field work Mr. Pepper exhibited punctilious care and ability, and his notes were always models of detail and completeness.

During the last few years, as other duties permitted, Mr. Pepper devoted much attention to the elaboration of his studies of Navaho weaving, commenced many years before, the basis of his research, to a considerable extent, being a collection of Navaho textiles which he had gathered from time to time, and which ultimately was acquired by the Museum. The results of these final studies is an extended memoir on the subject which will be published under the imprint of the Museum.

Mr. Pepper was a founder of the American Anthropological Association, a fellow of the American Association for the Advancement of Science and of the American Ethnological Society of New York, a member of the American Folk-Lore Society and a corresponding member of the Academia Nacional de Historia of Ecuador. *Indian Notes*.

A complete bibliography of Mr. Pepper's works appears in *Indian Notes*, v. 1, no. 3, July 1924, pp. 108-110.

DR. A. E. JENKS, Chairman of the Division of Anthropology and Psychology, National Research Council, Washington, D. C., and professor of Anthropology, University of Minnesota, received the degree of Doctor of Science from Kalamazoo College, his *alma mater*



June 18th, at the time of delivering the Commencement address on the subject "The Dawning Era of Science."

DR. VILHJALMUR STEFANSSON has returned from his exploration of Central Australia and on August 15 sailed for the United States. *Science*.

MR. M. R. HARRINGTON AND MR. L. L. LOUD have spent the months of July and August excavating the rich cultural deposits of Nevada caves in the interest of the Museum of the American Indian, Heye Foundation.

MR. H. U. HALL, formerly Assistant Curator of the Section of General Ethnology at the University of Pennsylvania, is now Curator of that section. During the absence of Dr. Farrabee, whose illness continues, Mr. Hall has been appointed as Acting Curator of the American Section.

SURVEY OF NIHOA AND NECKER ISLANDS. During 1923 the Tanager Expedition, under the joint auspices of the United States Navy, the U. S. Biological Survey and the Bernice P. Bishop Museum, made a scientific survey of the chain of islands extending from Hawaii, 1,000 miles northwestward to Ocean Island. Somewhat unexpectedly ruins of ancient settlements were found on the islands of Nihoa and Necker. These two islands are eroded remnants of volcanic masses, cliff-bound and without water. On them a landing party made collections and maps, but had neither the time nor the facilities for an exhaustive study of the archaeological remains.

During July of the present year, the United States Navy again provided the *Tanager*, and with a selected navy personnel and a group of scientists from the Bishop Museum, under the direction of Professor Harold S. Palmer, the ship returned to Nihoa and Necker equipped for making topographic maps, sketches and photographs showing the location and character of the walls, house platforms, terraced fields and burial grounds. With considerable difficulty land camps were established and the surfaces of the islands cleared of brush, revealing ruins favorably placed for study.

As compiled by Kenneth P. Emory, ethnologist of the Bishop Museum staff, the Nihoa maps show fifty structures within an area of about 130 acres—house platforms, temple sites, garden terraces; the Necker maps show only ruins of places used for religious purposes. The collections from these islands include stone bowls, stone idols,



GUSTAF RETZIUS

By N. C. NELSON

ANTHROPOLOGY recently lost a distinguished worker in the person of Gustaf Retzius, Emeritus Professor of Anatomy at the Caroline Institute in Stockholm, who died July 21, 1919, in the seventy-seventh year of his age.

Sweden, during the last two centuries, has given to the world several names that must forever remain inscribed in the annals of science. Whether Gustaf Retzius belongs to this group only time can tell; but, certainly, it is seldom given to any single individual to render service to science on so monumental a scale and at the same time service of such uniformly high quality. Primarily a pioneer in modern medical research and in the development of histological technique, he found time also to contribute important works on physical anthropology, one brief paper being a description of the skeletal material obtained by G. Nordenskiöld from the cliff-dwellings of the Mesa Verde in Colorado. It is fitting to recall also that his father before him—Anders Retzius—was an enthusiastic anthropologist and that he too wrote several brief papers on American subjects.

The following intimate remarks on the career of Gustaf Retzius are based mostly on accounts in the Stockholm papers for July 22, and largely on the appreciation penned by Prof. Carl M. Furst, one of his oldest students as well as his lifelong friend and co-worker.

Gustaf Retzius was born in Stockholm in 1842. His family belonged to the learned aristocracy of Sweden, there being three generations of naturalists behind him on his father's side and several men of science on his mother's side as well. His father, Anders Retzius, himself a noted anatomist, was a born genius, always bubbling over with original ideas, few of which however were carried to completion. Growing up in a stimulating atmosphere of this kind it was but natural that the young Retzius should follow in



his father's footsteps. Accordingly, he graduated in medicine in 1871 and in 1878 was appointed Professor of Anatomy and Histology in which capacity he continued active with but few interruptions to the time of his death. Aside from his successful labors as a teacher, his scientific investigations range over the wide field from protoplasm to human craniology, with special attention as a rule to histology or minute structure. He has contributed more or less voluminous monographs, *e.g.*, on protoplasm, on spermatozoa, on the eye, the ear, the brain, and the nervous system, in addition to his more strictly anthropological papers. His biological publications alone comprise nineteen folio volumes with copious illustrations, many of them in his own hand. Altogether he left behind approximately five hundred important titles, two hundred and fifty of which are listed in his memorial volume.

The extraordinary volume of Retzius' labors is explained in part by the fact that he was able to finance his own publications, which he put out in superb style. Another explanation was his ability to inspire others to assist him, including both his wife and his mother. Back of it all, however, was his own genuine love for work.

One of the interruptions in his scientific career was the interval of 1884-87 when as editor-in-chief of one of the Stockholm dailies, *Aftonbladet*, the idealistic side of his nature had free play. As a young man he had tried his hand at poetry, had in fact won the Academy prize for a collection of sonnets. With his sister he had also translated and published many of Burns' poems and in later days he found time to compose cantatas, as for example on the occasion of the Linnaeus Celebration in 1907. In his new capacity as editor he took hold of a financially and politically bankrupt journal and in three years transformed it into a strong thoroughly progressive sheet. To indicate his liberal attitude it will be enough to mention that he did the unheard of thing of appointing a woman to the staff of the foreign department. For the rest he solicited articles from the ablest and most prominent men and women of the day. All social and humanitarian as well as pedagogical and scientific questions were presented. Art and literature likewise

received due share of attention. For himself Retzius wrote a series of biographies, travel sketches and popular scientific articles; but he tried his hand also at political leaders, literary notices and when necessary delivered small talks and poems. For a time it looked as if he would let slip his scientific interests.

To a man of such gifts and such industry the highest honors and recognitions came as a matter of course from every quarter of the globe. Retzius was perhaps less well known in America than was his due; yet he had traveled here and was an honorary member, *e.g.*, of the Washington and Philadelphia Academies of Science. His last and most prized reward came to him from the Swedish Academy of Science, on the occasion of his seventieth birthday, in the shape of a memorial volume consisting chiefly of anatomical studies.

Although the writer was not personally acquainted with the deceased, he may venture to pay his own respects by referring once more to Retzius as an anthropologist. His interest in the subject was unquestionably instilled by the father, who is the recognized founder of modern craniometry. The elder Retzius died in his prime, in 1860, leaving a number of scattered brief papers. These papers, four years later, were gathered together and published with a foreword by the son as the first evidence of his interest in the subject. He was only twenty-two years of age at the time. In looking over the volume, it appears that the father as early as 1842 had made a beginning in classifying the human races on the cephalic-gnathic index basis and that in 1860 he presented before the Swedish Academy a map of the world showing the cephalic index distribution—a map which in all general respects is identical with that published by Ripley in 1899. On the basis of these investigations Anders Retzius became the first to recognize the mixed character of Europe's population and thus to challenge the validity of the Aryan hypothesis.

The most noteworthy publications by Gustaf Retzius himself commence with "Finnish Craniology" (Swedish, 1878), a title which covers in fact a considerable sketch of Finnish culture in all of its phases past and present, besides a brief chapter on the sup-



posed former distribution of Lapps in Finland. The somatic division of the treatise includes observations and measurements on ninety-two living subjects leading to the recognition of two essentially different race elements as having entered into the Finnish population proper. Approximately ninety skulls were also obtained. For eighty of these he calculated the cephalic index merely while thirty of them were subjected to a more complete series of measurements.

The next work, "Ancient Swedish Crania" (Swedish ed. 1899, German 1900), is a well rounded, sumptuously illustrated report on somewhat more than one hundred skulls, fairly evenly distributed over the Neolithic, the Bronze, and the Iron ages. The results prove that the population of Sweden from the earliest times has been overwhelmingly dolicocephalic but that all along there has been present a slowly increasing admixture of brachycephalics, the exact origin of which is uncertain. The report proper is preceded by a valuable review of the general investigation of Europe's past and present racial characteristics.

The last important contribution, a joint work entitled, "Swedish Anthropology" (German ed., 1902), is a statistical study of army recruits. It was a labor of love, done with governmental sanction but at private expense. The investigation covers measurements and observations on the army contingents for 1897 and 98, in all about 45,000 subjects of the age of twenty-one. The general results show that the so-called pure Nordic type—tall, dolicocephalic, light hair and blue eyes—which constitutes more than ten percent of the entire population, is numerically strongest in what may be roughly designated as the interior central section of Sweden and that it becomes rarer towards the coast and also northwards and southwards owing to intermixture of other race types.

In conclusion it will be of interest to remark that Retzius was somewhat concerned as to the ultimate fate of his pure blond race. As is made evident in his Huxley lecture of 1909, he seemingly took the view of certain German writers that the North European race branch has for some thousands of years been slowly but steadily yielding ground to the short, dark, brachycephalic race branch, at

home perhaps originally in Asia but for a long time dominant also in central and southeastern Europe. Furthermore, it was his opinion that the Nordic temperament is not adaptable to the coming industrial type of civilization. But whether or not Retzius was temporarily blind to the fact that in the struggle for existence under the new order of things the qualities of character commonly associated with the North European will still be in demand, he was thoroughly sensible of the importance and also of the delicacy of the whole question involved, and one cannot but feel that in these social and political aspects of anthropology he would have been a safe and sane guide.

AMERICAN MUSEUM  
OF NATURAL HISTORY,  
NEW YORK CITY.



ing the manners and customs of the Pueblo, Apache, and Navaho Indians. His work on the *Snake Dance of the Moquis of Arizona* was the outcome of a part of this research, and formed the first scientific contribution to that celebrated ceremony. After taking a prominent part in the surrender of Geronimo, the Apache renegade, and his band in the Canyon de los Embudos, Sonora, Mexico, March 26, 1886, Captain Bourke was ordered to Washington for the purpose of elaborating his voluminous notes obtained during many years of contact with the Indians, which work was continued until April, 1891. Not content with a mere collation of his material regarding the tribes with which he was most familiar, Bourke spent many months during his sojourn at the capital in its extensive libraries for the purpose of recording similar and parallel customs of other primitive peoples throughout the world, and the results of this research were greater than one could ever hope to publish during a lifetime. A suggestion of the completeness of this work may be gained from his *Medicine-men of the Apache*, in the ninth annual report of the Bureau of Ethnology, a paper which has been highly commended and widely quoted.

Captain Bourke's interest in the ordure rites of primitive peoples was first aroused at Zúñi in 1881, during a ceremony of the Nêwekwe priests of that pueblo, and the results of his observations on that occasion were published in a pamphlet distributed among a limited number of students. A continuation of his researches along this line led to the publication of his noteworthy *Scatalogic Rites of all Nations*, Washington, 1891.

After rendering material aid to the Pan-American Congress, to which duty he was detailed by reason of his efficient knowledge of the Spanish language, Captain Bourke rejoined his regiment on April 9, 1891, and commanded his troop at Fort McIntosh, Texas, to May 14 of that year, and the troop and post at Fort Ringgold, Texas, being frequently in the field in the operations against Garza's band of marauders of the Rio Grande frontier, to March 3, 1893. This wary bandit was so closely pressed on one occasion by Bourke and his hardy troopers that his saddle and personal diary found their way to the National Museum, of which Bourke was a valued collaborator and a constant contributor. Among the many other collections in that institution bearing his name is the necklace of human fingers taken during the raid of the allied Sioux and Cheyenne in Wyoming and



Montana in the winter of 1876-'77, which resulted in the surrender of 4,500 hostiles at Red Cloud and Spotted Tail agencies in the early spring of the latter year.

During the World's Columbian Exposition Captain Bourke's knowledge of the Spanish language and of Spanish institutions was again called into requisition by his assignment to duty with the department of foreign affairs, in charge of the Convent of La Rabida. From November, 1893, to July 8, 1894, he commanded his troop at Fort Riley, Kansas, and was an active participant against the railroad rioters at Chicago in the autumn of 1894. He was ordered to Fort Ethan Allen, Vermont, his last post of active duty, in the autumn of that year, after having faithfully and bravely served his country in every quarter of its domain.

Captain Bourke was a frequent contributor to periodical scientific literature, particularly to the organs of the Anthropological Society of Washington, of which he was a councilor during his residence in Washington, and of the American Folklore Society, of which he was elected president in December last. The most frequently quoted of Captain Bourke's periodical contributions are: *Folklore concerning arrows*; *Vesper hours of the stone age*; *Primitive distillation among the Tarascoes*; *Distillation by early American Indians*; *The laws of Spain in their application to the American Indians*; *Notes on the cosmogony and theogony of the Mojave Indians*; *The gentile organization of the Apache Indians*; *The miracle play of the Rio Grande*; *The folk-foods of the Rio Grande Valley and of northern Mexico*, and *Popular medicine, customs, and superstitions of the Rio Grande*.

In addition to his connection with the societies above mentioned, Captain Bourke was a fellow of the American Association for the Advancement of Science, and a member of the Victoria Institute of Great Britain, and of the Congrès International des Américanistes. Captain Bourke's exceptional versatility, the product of a wide and varied experience, coupled with an extraordinary sense of humor and a wonderful power of expression, made him a most genial companion and gives even additional zest to his extra scientific productions, *An Apache Campaign*, *On the Border with Crook*, and *Mackenzie's last fight with the Cheyennes*.

In the death of John Gregory Bourke, Anthropology has lost an indefatigable investigator, American Literature a vivacious contributor, and the Army of the United States a courageous soldier.

F. W. HODGE.



American Anthropologist  
Vol. 21, No. 11, Apr.-June 1919

THEODOOR DE BOOY

By MARSHALL H. SAVILLE

IN the death of Theodoor de Booy, American archaeology has lost one of its most enthusiastic workers and field explorers. Mr. de Booy died from the effects of influenza at his home in Yonkers, N. Y., February 18, 1919. He was the son of Vice-Admiral C. J. G. and Mary (Hobson) de Booy, and was born in Hellevoetsluis, Netherlands, December 5, 1882. He received his education at the Royal Naval Institute of Holland. In 1906 he came to the United States, becoming an American citizen in 1916. In 1909 he married Miss Elizabeth Hamilton Smith, of Louisville, Kentucky. In company with his wife, Mr. de Booy went to the Bahama Islands in 1911, and during his residence there became interested in the antiquities of the Caicos group of the Bahamas, devoting much time to the exploration of their numerous caves and mounds. On his return to the United States, Mr. de Booy published, in 1912, the first results of his archaeological researches in a paper entitled "Lucayan Remains on the Caicos Islands." He then determined to devote his life to the subject, and the opportunity soon presented itself, when he became attached to the Heye Museum, now the Museum of the American Indian, Heye Foundation, of New York City. Mr. de Booy joined the staff as field explorer for West Indian work, and sailed for the Bahamas in June, 1912, remaining there for six months. He was notably successful on this trip, among the most important objects recovered being a remarkable paddle which he discovered in a cave on Mores island. Mr. de Booy's next expedition was to Jamaica, where he spent the months of January, February, and March of 1913, on this trip conducting excavations in some of the kitchen-middens found on various parts of the island. During July to October of the same year he devoted his attention to Santo Domingo, there undertaking the first systematic exploration ever made in this important and



VI. Anthropological measurements should be taken with a properly selected set of instruments and according to uniform methods; they should always be expressed in centimeters, and in the case of measurements between symmetrical points these should always be determined by working from the left side. A minimum amount of admissible error shall be determined for each measurement.

VII. Anthropological nomenclature in general, as also that for measurements, should be scientific, simple, and should be expressed always in the Latin language. It is to be recommended that non-specialists use also their own language.

VIII. The original measurements should always be set down in full, and should be elaborated according to strict statistical methods. The selection of indices and of the categories into which they may be grouped should be made, in so far as possible, on the basis of comparative morphologic and morphometric criteria.

IX. All graphic reproductions (photographs, designs, etc.) should always have the same orientation for the same parts of the body; they should not be under a size to be determined by subsequent agreement, and in so far as possible, there should be a wider use than now prevails of radiography, of chromophotography, and of stereoscopic photography.

X. The synthesis of numerical and morphological data should be made according to the method of diagrams and maps; and the grouping of anthropological units as well as their geographical distribution should be made according to the principles of *varieties*, *species*, *genera* . . . , as is the custom in zoölogy and in botany.

Having thus arrived at the end of our communication and returning to the theme with which we started—that of the institution of a uniform blank of measurements for recruiting—we formulate the wish that the proposition which we made today in this memorable assembly be received with general favor, to the entire advantage of the progress of science and of social well-being.

ROYAL ITALIAN EMBASSY,  
WASHINGTON, D. C.

little-known field, a work which was continued in the spring of 1914. On his return to the United States, Mr. de Booy prepared a report on the results of the two expeditions, which were devoted chiefly to the exploration of certain caves in Santo Domingo and to work on the small island of Saona. In October and November of the same year he made an archaeological reconnoissance of eastern Cuba, and was the first to discover the great riches of this hitherto neglected field. The year of 1915 was a busy one with Mr. de Booy. The months of February to April were spent by him in exploration and excavations on the island of Margarita, Venezuela, and from May to September he was occupied in excavating in the southeastern part of Trinidad. In 1916 Mr. de Booy made a third trip to Santo Domingo, and in the same year he visited Porto Rico and Martinique. On all of these islands he conducted excavations.

Owing to the acquisition of the Danish West Indies by the United States, Mr. de Booy was sent by the Museum to the islands comprising this group, where he remained from October, 1916, until February, 1917. This was the first archaeological work ever done there, and he was notably successful in obtaining material and information respecting the antiquities of this region. With this expedition his fieldwork for the Museum came to an end. Early in 1918 he severed his connection with it, and commenced preparations for an exploration of the unknown region of the Perijá mountains in eastern Venezuela, and an investigation of the ethnology of the Motilone Indians, the savage remnant of a tribe which has always kept their country free from white settlement and exploration. This journey was made under the auspices of the American Geographical Society and the Museum of the University of Pennsylvania, of which latter institution he became a field worker for a short period. After his return from this trip, Mr. de Booy joined the force of the State Department Inquiry, as one of its South American experts, and was still engaged in this work at the time of his death.

One of the most active and prolific investigators in archaeological and geographical research, Mr. de Booy had reached the point where the future held promise of still greater and more valuable results. His genial and pleasing manners made for him



many friends at home and abroad, and his early passing is a distinct loss to this branch of scientific endeavor. With commendable industry he prepared reports immediately after each expedition, and at the time of his death was engaged on a comprehensive book describing the region of his latest activities. His collections and writings find a place in the front rank of West Indian exploration, and our knowledge of the ancient history of the Antilles has been greatly enhanced as the result of his entering this field. A list of his most important publications follows:

1912. Lucayan Remains on the Caicos Islands. *American Anthropologist* (N. S.), vol. XIV, no. 1, January-March, 1912, pp. 81-105, 18 figs. pl. VI.
1913. Lucayan Artifacts from the Bahamas. *American Anthropologist* (N. S.), vol. XV, no. 1, January-March, 1913, pp. 1-7, 5 figs. Reprinted as *Contributions from the Heye Museum*, No. 1.  
 Certain Kitchen-middens in Jamaica. *American Anthropologist* (N. S.), vol. XV. Reprinted as *Contributions from the Heye Museum*, No. 3.
1915. Pottery from Certain Caves in Eastern Santo Domingo, West Indies. *American Anthropologist* (N. S.), vol. XVII, no. 1, January-March, 1915, pp. 69-97, figs. 12-28, pls. IV-IX. Reprinted as *Contributions from the Heye Museum*, No. 9.  
 Certain West-Indian Superstitions Pertaining to Celts. *Journal of American Folk-Lore*, vol. XXVIII, no. CVII, January-March, 1915, pp. 78-82. Reprinted as *Contributions from the Heye Museum*, vol. II, no. 3.  
 The Cradle of the New World. *Bulletin of the Pan American Union*, March, 1915, pp. 311-319, 5 illustrations.
1916. Certain similarities in Amulets from the Northern Antilles. *Holmes Anniversary Volume*, Washington, 1916, pp. 24-30, 3 plates.  
 Notes on the Archeology of Margarita Island, Venezuela, *Contributions from the Museum of the American Indian, Heye Foundation*, vol. II, no. 5, pp. 1-28, figs 1-15, pls. I-VIII.  
 Island of Margarita, Venezuela. *Bulletin of the Pan American Union*, vol. 42, 1916, pp. 531-546.
1917. The Birthplace of Josephine, Empress of France. *Bulletin of the Pan American Union*, April, 1917, pp. 493-498, 5 illustrations.  
 The Virgin Islands of the United States. *Geographical Review*, New York, vol. IV, no. 5, 1917, pp. 359-373, 9 figs.  
 Indian Petroglyphs in the Antilles. *Forward*, Philadelphia, vol. XXXVI, nos. 17-18, April 28, May 5, 1917, 6 illustrations.  
 Archeological Investigations in the Virgin Islands. *Scientific American Supplement*, No. 2180, October 13, 1917, pp. 232-234, 9 illustrations.  
 Eastern Part of the Dominican Republic. *Bulletin of the Pan American Union*, September, 1917, 7 pp. 5 illustrations.



*Am. Anthropologist*, Vol. 18, No. 1, Jan-March 1916

HENRI BEUCHAT

By C. M. BARBEAU

THE forlorn hope that some of the lost members of the ill-fated Canadian Arctic Expedition might reappear has long been abandoned and it is with regret that we here record the presumed death of Henri Beuchat, one of the two ethnologists of the expedition.

Although still a young man, whose career lay more in the future than in the past, M. Beuchat had deservedly won a high reputation as an anthropologist. In him American archeology and ethnology lose one of their most brilliant European exponents. We are indebted to Madame M. Hollebecque, of Paris (France), for much of the following biographical material.

If M. Beuchat's personality and achievements were to be characterized in a few words, we would describe him as a modest and most brilliant self-made man of science, who by sheer determination and talent acquired a vast and critical knowledge of many subjects and achieved success in the face of adverse circumstances.

Born in Paris, in 1878, his school education came to a premature end when he was only thirteen years of age. His naïve but keen interest in books then determined his choice of a calling; and he became a compositor in a Paris printing office. At the age of eighteen the death of his father and his responsibility for the welfare of his family induced him to accept the more remunerative position of accountant in a business concern. His military training was next undergone in his twenty-second year. Bent as he was to become a man of learning, these years of early assiduous manual labor, although somewhat impairing his health, were not without benefit for him. All his spare moments were devoted to his many-sided hobby: books, museums, and lectures. In the printing office he developed the technical qualities of neatness and precision, and his skill as a draughtsman, which enabled him later to provide his



own manuscripts or publications with maps and engravings from his own hand. On the very subject of the printer's types his curious and searching mind soon began to speculate. He thus undertook a minute study of the history of printing and writing generally. Other symbols and methods of writing also appealed to the young typographer; and his greatest enjoyment, when he was a mere adolescent, consisted in deciphering hieroglyphic, cuneiform, Syriac and Nagari characters and alphabets, and compiling such data in notebooks. Through the subsequent changes in his life he remained interested in this study, which later embraced that of the Mexican and Central American systems. In later years he was still gathering materials and fondly elaborating a plan for a forthcoming work on 'writing' (*L'Ecriture*). This hobby led him into the study of living languages. While he was giving French lessons to Danish, Swedish, Norwegian and other students in Paris, he was repaid by lessons in their own languages. From this starting point his curiosity and power of assimilation embraced many other languages, including those of Central and South American tribes.

A certain modification in his lines of interest followed his passage from the printing to the business offices. The business drudgery gave life, in his imagination, to figures, formulae, and calculation. After he had mastered the elements of mathematics, his attention gradually turned to astronomy and chemistry. It is, indeed, astonishing that a self-made scholar, even when gifted with unsurpassed memory and judgment, should not have lost his bearings in the midst of such diversified subjects. Where others are usually submerged, however, he was building and storing for the future. Mere facts were interesting to him only as related to others; and instead of being stored pell-mell in his brain they were assimilated and classified. This explains how he developed into a type of scientist that has well nigh disappeared now, and won distinction in fields of science quite divorced from his own anthropological research. Thus, in 1913, he won the '*Prix des Dames*' in astronomy, for his many services since 1894 in attending and directing the weekly meetings of the Société Astronomique de Paris. And, as a pastime,

he was annotating and correcting Mendeleyeff's data on chemistry, and preparing a scientific novel entitled *Les Cristaux*, in which he was embodying several of his philosophic ideas and hypotheses.

Notwithstanding the exclusiveness of the Paris academic and scientific circles, the reputation of young Beuchat began to spread in many quarters, and won him the favors and protection of many noted personalities, notably the Duc de Loubat, la générale Bocher, M. le Souëf, and Léon de Rosny. In 1902 he became *élève titulaire* at the Section des Hautes Etudes, La Sorbonne; and he assimilated in his own way the anthropological views and methods of the Durkheim school, especially under the guidance of his esteemed masters and friends, MM. Mauss, Hubert, and others. Lack of space here forbids the detailed account of his arduous and trying career as anthropologist in Paris. While he was stubbornly pursuing his own researches on American archeology and ethnology, his energy was often taxed to the utmost by his professional duties and many tasks of secondary importance. In 1902-3 he became the secretary-treasurer of *La Revue des Etudes Américaines*, and was entrusted by M. le Souëf with the preparation of a lengthy illustrated manuscript on Mexican art. After receiving a diploma at the Ecole du Louvre, he was appointed secretary of *La Revue de Paris*. The university ruts and regulations barring him from a university function, for which he was otherwise qualified, forced him to accept an insufficiently remunerative post in the Fine Arts Department of the French Government. In this capacity he had to attend to exacting drudgery in connection with the administration and classification of the ancient monuments of France. Other irksome tasks also consumed much of his time, such as the preparation of maps showing the distribution of racial and cultural elements in America for the Musée de Saint-Germain-en-Laye, the restoration of the Marquesas islands hall in the Louvre, and the translation, in 1912, of Nordenskiöld's work on the Gran Chaco Indians (*La vie des Indiens au Grand Chaco*, Paris, Delagrave).

Although only at the beginning of his productive career as an Americanist, his versatility, clarity of ideas, and creative talent are shown in his essays, reviews, and works, the principal of which



is the remarkable and unique *Manuel d'Archéologie Américaine* (Paris, Picard, XLI, 773 pp., 1913), the only ambitious classificatory work on American archeology in its wider sense yet attempted.

The bibliography of his publications is the following:—

In the *Revue des Etudes Américaines* (1902): 'Notice sur quelques manuscrits mexicains de la Bibliothèque Nationale de Paris'; and 'Notice analytique sur les travaux de Lord Kingsborough' on Mexican antiquities. (1903): 'Les peuples Chahta-Maskokis' (Jan.); 'Quelques traditions des Eskimos de l'Alaska' (April); 'Quelques légendes des Eskimos de la terre de Baffin' (July); 'Le mythe de Sedna chez les Eskimos du centre' (Nov.).

In *L'année Sociologique* (1904-5) he collaborated with M. Mauss in an important study on the social morphology of the Eskimo, entitled 'Essai sur les variations saisonnières des Eskimos' (pp. 40-132).

To *L'Anthropologie* he contributed a number of reviews (1905-13) on the works of W J McGee, Mauss, Steensby, E. de Jonghe, Nuttall, Speck, Berloni, and others.

In collaboration with Dr. P. Rivet he published several linguistic papers, namely: 1, 'Contribution à l'étude des langues Colorado et Cayapa (Equateur)' (in *Journal de la Société des Américanistes de Paris*, t. IV, 1907); 2, 'La famille linguistique Záparo' (*ibid.*, t. IV, 1908, fasc. 2); 3, 'La langue Jíbaro ou Šiwora' (in *Anthropos*, IV, 1909; V, 1910); 4, 'Affinités des langues indigènes du sud de la Colombie et du nord de l'Equateur' (Paniquita, Coconuco et Barbacoa) (in *Muséon*, 1910); 5, 'La famille Betoya ou Tucano' (in *Mémoires de la Société de Linguistique de Paris*, t. XVII, 1911).

In the *Revue d'Archéologie* (1911) he published a study on the present knowledge of the 'Manuscrits indigènes de l'ancien Mexique,' which he later completed in his article on 'L'Ecriture Maya' (in *Journal de la Société des Américanistes de Paris* (1913)).

In 1911 he collaborated with Mme. M. Hollebecque in the preparation of a small handbook on the origin and nature of religious phenomena, *Les Religions, Etude historique et sociologique du phénomène religieux* (Paris, M. Rivière).

The premature end of his career leaves many important studies

and works unfinished. More than 5000 slips, representing many years of work, had been compiled, prepared, and sorted, and the plan arranged for a voluminous sequel to his *Manuel d'Archéologie Américaine*, entitled *Peuplades Sauvages de l'Amérique*. In collaboration with MM. Lahy, Chaillié, and Mme. Hollebecque, he was also compiling materials for an exhaustive study of the *Mythes de la Création*, in the various parts of the world.

When, in the spring of 1913, he was invited to join the Canadian Arctic Expedition, his decision was instantaneous. We are told by his mother that this "was the first great joy of his life." Fond of seeing things with his own eyes, he wanted to live among the peoples with whom his imagination had dwelt for so long. The fragmentary evidence of books and museums was no longer sufficient; and he had long felt the call of living realities. Some of his La Sorbonne friends, in fact, wished, in 1909, that an expedition might be organized enabling him to complete in the field his Eskimo studies. Fate, however, seemed to be against him, and he many times despaired of ever getting away from libraries, museums, and the exacting trivialities of his Parisian environment. The opportunity of joining the Canadian Arctic Expedition, although practically devoid of any material compensation, appeared to him as a unique chance of emancipation. His mother, to the support and love of whom he had pledged his life, was glad for him, although heart-broken. In a recent letter she wrote: ". . . Life had never yielded him the happiness which he deserved; and I was hoping for his future." When he joined the Anthropological Division of the Geological Survey of Canada, his new friends enjoyed the charm of his companionship and brilliant conversation. Everyone was impressed with the extent and soundness of his science. Jenness, his companion ethnologist, wrote from Nome (Alaska) ". . . Beuchat is an absolute encyclopedia of knowledge. He has already been christened 'professor.' And he is a most delightful companion . . . ." Jenness, an Oxford University graduate, did not seem to suspect that his highly deserved eulogy was addressed to a humble Paris typographer, accountant, secretary, proof-reader, and government employee, who in spite of all burdens



and odds had achieved learning. His friend Chaillié, a French scientist, wrote of him: "His quality of self-made man (*autodidacte*) was what we liked him for. Besides his reading and prodigious memory, he had imbibed much experience in varied stations in life, whence his emotional and intellectual faculties had derived precious gifts . . . ."

But where he was sure to find the realization of his dreams and the enjoyment of a world of actualities, he was unfortunate enough to meet, at the age of thirty-five, the fate of so many polar explorers. All those who knew him mourn today the loss of a friend and Americanist in whom they had placed the most sanguine hopes. When the news of his presumed death was last summer broken to his mother, it was feared that she could not withstand the shock. She showed herself, however, as heroic as many had known her to be and she finally said: "I have lost everything. But I won't give up life yet. Our epoch of gigantic struggles is worth living through." And more recently she wrote: "I feel in my heart that my sorrow would be less bitter if I were told that the loss of my only son has been a sacrifice to science."

ANTHROPOLOGICAL DIVISION,  
GEOLOGICAL SURVEY, OTTAWA



HENRI BEUCHAT



Am. Anthropologist, Vol. 1 (NS), No. 2, April 1899

## NOTES AND NEWS

**Philipp Johann Joseph Valentini**, Ph.D., whose death occurred March 16, 1899, at Saint Luke's Hospital, New York City, was born in Berlin in 1824. His father was an Italian, and his mother a German. The father was a teacher of foreign languages, and the author of a German-Italian dictionary, which, at the time, was highly estimated for its accuracy. He was also tutor of the young scions of royalty at His Majesty's court.

The son Philipp was educated in the Lyceum of Rosleben and in the Gymnasium of Torgau. Later he studied jurisprudence at the University of Berlin, where he was appointed auscultator of the Supreme Court. In 1854 he went to Central America, and settled on the site of Puerto Limon, on the Atlantic shore of Costa Rica, where he founded the above town under government auspices. Learning that the Costa Ricans could give no account of their ancestors, he returned to Germany in 1858 to search for manuscripts and historical information regarding the colonization of this part of Central America by the Spaniards. The results of this study were embodied in a dissertation for which he received the degree of Ph.D. from the University of Jena. His early studies were influenced somewhat by his acquaintanceship with the great Humboldt, who was an intimate friend of his father.

In 1861 Valentini returned to Costa Rica, where he lived for eleven years, meanwhile establishing a coffee plantation. While living in Costa Rica, he made several trips along the coast, from the Isthmus of Panama as far north as Boca del Toro. Later he made a trip through Nicaragua and San Salvador into Guatemala, and there came into communication with the lamented Berendt. In Guatemala City he made researches among the manuscripts preserved in the Institute, and among other things discovered a portrait of the famous conquistador, Bernal Diaz del Castillo, which he published in the *Historical Magazine*, New York. At this time he completed his manuscript on the discovery and conquest of the ancient province of Castilla de Oro, the publication of which at the time was prevented by a revolution in Costa Rica; and this still remains among his unpublished works. His researches carried him as far as the famous Quiche ruins of Santa Cruz del Quiche.

He went to New York City in 1871, and we find him in 1879 engaged as an instructor of languages in the preparatory classes of the



School of Mines of Columbia University. About that time he began to publish monographs on the archeology of Mexico and Central America—the result of his devotion to these matters while in Central America. He began to expand his matured views and rich experiences in a series of remarkable works, which, though limited in extent, were welcomed by men of science. He had a good knowledge of the Maya language and less so of the Nahuatl. Both greatly aided him in his studies, although linguistics served to him only as a means of attaining scientific ends in other directions. His mental training was logical, thorough, and fundamental, and reflected the critical spirit which we find throughout in the higher institutions of learning in Germany. He stated his views frankly and fearlessly, as he thoroughly hated all ambiguity in life, in style, and in science. So were also his literary productions clear, painstaking, and to the point.

The Toltec nation which plays so important a part in the Spanish histories of old Anahuac, was a misconception, he declared; for the history of this people was partly mythical, partly a series of exaggerations, which sprang from the magnifying of rather insignificant facts. To make, as these Spanish writers do, a Mexican empire of the Toltec power, which is said to have preceded the "empire" of the Chichimecs, was just as unhistoric as to say that the governor of the present State of New York is the ruler, king, or emperor of the United States of America.

Quite a number of his monographs were published in the *Proceedings* of the American Antiquarian Society of Worcester, some being translated from German originals by Stephen Salisbury, Jr. The first noteworthy work on the archeology of Mexico was his study of the famous Calendar Stone, which was first delivered in German in the form of a lecture in New York City in 1878. An abstract was translated by Mr Salisbury and published by the Antiquarian Society. The original work is far more extensive, and remains among Valentini's unpublished writings. Of great importance was his argument against the calculiform Maya alphabet contained in Bishop Landa's writings, "The Landa Alphabet, a Spanish Fabrication," 1880. He demonstrated beyond all cavil that the Mayas never had any alphabet in our sense of the word, representing the isolated sounds of the language phonetically, but that Landa's characters form only portions of ideographic symbols.

Although the Maya calculiform script is still far from being solved, Valentini is to be considered as a pathfinder in this line of research for having dissipated many of the illusions and false theories bearing on



PHILIPP JOHANN JOSEPH VALENTINI



this relic of semicivilized antiquity. He was greatly interested in the history of the earliest discoveries of the Spanish and Portuguese explorers and navigators in America. His most extensive paper, "The Portuguese in the Track of Columbus," illustrated by many maps, was published in the *Bulletin* of the American Geographical Society, New York. His remarks on the travels of Pinzon, who first saw the mouth of Amazon river, were recorded and reviewed in the *American Antiquarian* of Chicago. One of his last publications belonged to this class, and is entitled "Pinzon-Solis, 1508," published in the *Zeitschrift der Gesellschaft für Erdkunde*, Berlin, 1898. His last work, now being published in the *Journal of American Folk-Lore*, is on the Trique Indians of the state of Oaxaca, which he read at the meeting of the Folk-Lore Society in Columbia University in December last.

The following list of Valentini's writings, from the *Proceedings* of the American Antiquarian Society, was prepared by Mr Salisbury, to whose sketch of Valentini's life, published as a note to the paper on the Mexican Calendar Stone, we are indebted for many of the facts presented in this brief notice:

- A New and an Old Map of Yucatan, 1879.
- Mexican Copper Tools. Illustrated. (*Proceedings* of American Antiquarian Society, 1879.)
- The Katunes of Maya History. Illustrated. (*Ibid.*, 1879.)
- Mexican Paper. Illustrated. (*Ibid.*, 1881.)
- Two Mexican Chalchihuites, the Humboldt Celt and the Leyden Plate. Illustrated. (*Ibid.*, 1881.)
- The Olmecas and the Tultecas. Plates and map. (*Ibid.*, 1883.)
- Semi-lunar and Crescent-shaped Tools, with special reference to those of Mexico. Illustrated. (*Ibid.*, 1885.)
- The Landfall of Columbus at San Salvador. Plate. (*Ibid.*, 1892.)
- Analysis of the Pictorial Text Inscribed on Two Palenque Tablets, Parts I and II. Plates. (*Ibid.*, 1895, 1896.)
- Das Geschichtliche in den mythischen Städten "Tulan," 1895.
- Clay Figures Found in Guatemala, 1895.

Dr Valentini left a great number of manuscripts and notes, several of which are practically ready for publication. His most important contribution was an historical work on Costa Rica, bearing the title *Castilla de Oro*. This treats of the early history of Costa Rica, and it is hoped that it will eventually be published by the Costa Rica government. During the last three years he was engaged in making exhaustive studies of the migrations of the early Mexican people, finding analogies with their culture in Persia and Tibet. He was engaged also in a study of the origin of the astrological calendar, and claimed to have found its counterpart in Tibet. His knowledge of early



Spanish-American history was very extensive. In Dr Valentini's death American archeology has lost one of its most devoted and painstaking students.

A. S. GATSCHET.

**The Voth Collection**—Through the generosity of Mr Stanley McCormick, of Chicago, the Field Columbian Museum has been enabled to purchase the ethnological collection formed by Rev. H. R. Voth, the missionary to the Hopi or Moki Indians of northeastern Arizona. This collection was gathered by Mr Voth for the purpose of aiding him in his studies of and work among these people since 1893. Mr Voth's knowledge of the Hopi language and the studies he has made of these people, not only as a missionary but also as an ethnologist, enable him to furnish with the collection such information as will make it particularly valuable for the study of the Hopi Indians in general, and especially those of the pueblo of Oraibi. The collection will prove so much the more valuable as Mr McCormick has provided also the means for employing Mr Voth a number of months, during which time he will assist in preparing the labels for and in augmenting the collection by reproducing various altars, sand mosaics, etc. Mr Voth's collection has been known to scientists interested in the Hopi for some time, and several efforts have been made to purchase all or parts of it, but the collector has hitherto refused to consider any offer in that direction. His health, however, making an extended leave of absence necessary, Mr Voth saw the necessity of having the collection deposited in a place of greater security than was possible in his home at Oraibi; he therefore finally consented to dispose of it. The collection is now being installed in the Field Columbian Museum. Perhaps the first in general interest among the groups of objects is a collection of two hundred *tihus*, or dolls, representing the Hopi *katcinas* so far as they are known, especially those of Oraibi. In his studies of the complex question of the Hopi *katcinas*, Mr Voth soon discovered that many of the common *tihus* made by the Hopi are manufactured with little regard for accuracy, at least so far as the details of symbolism are concerned; hence many of the *tihus* were made to order in accordance with the true symbolic details of the personages which they are designed to represent. They are thus more accurate miniature reproductions of the *katcinas* than are those generally manufactured by the Hopi for sale. Secondly may be mentioned several dozen pipes of both stone and clay, including a number that have been used only in ceremonies (some of them for a long time), some used for ordinary social smoking in the kivas, and also a few found in house ruins near Oraibi. Of religious paraphernalia the collection contains a great variety, including



**Leo Sternberg<sup>1</sup>**

On August 14th, 1927, the most eminent of Russian ethnologists, Leo Sternberg, Professor at the University of Leningrad, Chief Ethnographer of the Museum for Ethnography, and Corresponding Member of the Academy of Sciences of the U. S. S. R., passed away in Duderhof near Leningrad.

Leo Sternberg was born in 1861. In his youth, immediately after completing his university studies in Odessa, he was arrested for participating in the Russian revolutionary movement and after serving a three years' jail sentence he was exiled to Saghalin for a period of ten years. Here, amidst the most distressing conditions of life and the greatest privations, surrounded by Gilyak and Ainu, he developed a live interest in the customs and beliefs of rude peoples. The remainder of his life was devoted to their investigation.

In 1897, after his return to Russia, he presented to the Academy of Sciences his comprehensive treatise "Contributions on the Language and Folklore of the Gilyak," which was published in the *Izvestija* of the Academy, 13:4, 1900. Since 1901 he was actively engaged at the Museum for Anthropology and Ethnography of the Academy of Sciences; and in 1915 he became Professor and Dean of the Ethnographic Faculty of the Geographical Institute, which was later combined with the University of Leningrad. At the same time he was chairman of the Siberian division of the Commission for the Investigation of the Peoples of the U. S. S. R. and the Jewish Historico-Ethnographic Society, founded with Professor W. Bogoras the Northern Faculty of the Oriental Institute of Leningrad for the enlightenment and education of the primitive populations of the Far East and Northern Russia, etc. Several times he took the most active part in the most varied congresses of the Old and New World, appearing for the last time in 1926 at the Third Pacific Congress at Tokyo, which he attended notwithstanding his undermined health.

Sternberg's significance for general ethnography and the history and development of Russian ethnography has a fourfold basis. First, he investigated the tribes of Eastern Siberia, especially the Gilyak, Oroche, Gold, and Ainu, who had been hardly at all studied in a scientific manner. Secondly, he extended and amplified the Academic Museum for Anthropology and Ethnography. Third, he founded

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<sup>1</sup> Translated from the German.



11. To the aid of advanced and worthy students to original research and field work.

12. To the eventual establishment, in the most favorable location, of the American Institute of Physical Anthropology, which would serve both as the home and library of the Association, and as the center of anthropometric instruction and of dissemination of anthropological knowledge.

All the above, it is understood, with special regard to the problems, needs, and progress of the people of the United States and neighboring countries.

The Association will consist of Active and Associate members.

The condition of active membership will be sound original work in or closely related to physical anthropology. Associate members will be all such persons from collateral sciences, or at large, who may, through sympathy with the objects of the Association or a desire to benefit from its activities, wish to join its ranks; they will have the privilege to participate in the meetings of the Association, without voting.

The annual membership dues, for both Active and Associate members, are fixed at \$2.00 per year. Applications for membership should be addressed to Professor D. J. Morton, Secretary-Treasurer, Department of Anatomy, College of Physicians and Surgeons, Columbia University, 630 W. 166 St., New York City.

A. HRDLICKA  
Chairman A.A.P.A.

an independent, hitherto unique, ethnographic school in the U. S. S. R., whose representatives are at present continuing his labors as university professors, museum directors, and investigators in the various sections of our vast Union. Finally, he created a whole series of original works, which constitute important contributions to theoretical, comparative ethnology.

Leo Sternberg was the first to collect texts of Gilyak folklore and translate them with ethnographic and linguistic annotations, thereby laying the foundations of Gilyak phonetics and morphology, as well as for the study of their social and religious life. He was the first to recognize the affinity of Gilyak with the Americanoid group, discovered classificatory kinship systems among the Gilyak and Tungus, investigated the sociological and spiritual culture of the Oroche and determined their origin and designation for themselves. He furnished exhaustive data on the peculiar Inau cult of the Ainu. His last major work was devoted to the Ainu problem. Here he attempted to prove, on the basis of extensive anthropological, archaeological, ethnographic, and linguistic materials that the Ainu had emigrated from Austronesia.

Leo Sternberg's comparative ethnographic researches mostly belong to the sphere of the history of religion and of genetic sociology and are distinguished by a wealth of facts and ideas. His essay on the Religion of the Gilyak in the *Archiv für Religionswissenschaft* (vol. 8, 1905) roused a great deal of interest in Europe and is often cited in technical literature. In two treatises on the Cult of Twins, *Sbornik of the Museum for Anthropology and Ethnography*, volumes 3 and 6, he interprets this cult and the correlated myths from the point of view of culture history by stressing the putative danger of twins to their own sex. In his substantial and valuable monograph on the eagle cult of Siberian tribes, which carefully collates and examines numerous evidences of the cult with relevant conceptions from ancient and modern times, he draws important conclusions bearing on the history of religion. Special problems he broaches and discusses in this paper cannot unfortunately be touched upon here.

The deepest and most significant product of the latest period in this sphere, however, is his "Divine Election in Primitive Religion." Originally a lecture at the Americanist Congress at Gothenburg, it assumed the proportions of a substantial essay embodying a wealth of subtle ideas and novel conjectures. It is a veritable treasure-trove of ethnographic parallels from all regions and epochs. It establishes



a general historical and psychological foundation for the phenomena of divine and sexual selection, for the varied forms of marriage with the deity, both as they occur in shamanism and in the higher religions.

Irrespective of his purely scientific writings, Sternberg did much for the diffusion of ethnographic knowledge among various classes of the Russian reading public. Under this head may be mentioned many articles in four Russian encyclopaedias about ethnographic, anthropological, and culture-historical topics, also articles in many periodicals. His best achievement in this line is doubtless his article on "Modern Ethnology" in the Moscow magazine *Etnografija*, no. 1, 1917, where the most recent achievements, currents, and methodological tendencies are succinctly but fascinatingly depicted.

It remains to mention that three university courses elaborated by Sternberg are on the level of modern science—the Introduction to Ethnography, the Development of Sociological Types, and the Development of Primitive Religion.

Thanks to Sternberg's far-reaching personal relations with Russian and foreign museums and individual scholars he succeeded in making extremely valuable contributions to the stock of museum collections. This holds especially for the South American and Siberian sections. He eagerly strove to extend the buildings of the Museum and to enrich it with collections from all over the world. In 1925 the building was enlarged to three times its size, all collections were installed anew, and a series of new divisions were opened, e.g., India and Indonesia. Sternberg rendered a great service to the Museum by inaugurating annual scientific expeditions to Siberia, Central Asia, the Caucasus, etc., which always resulted in rich accessions of specimens. He further established a special division for the Evolution and Typology of Culture, in which comparative series of analogous objects from the most diverse geographical areas were to be grouped according to culture-historical categories. Thus the Museum turned into a practical laboratory for the students of the Ethnographic Department as well as for every nascent investigator.

In his mental make-up and achievements Leo Sternberg was an outstanding personality of rich endowments. He harmoniously united the character of an enthusiastic revolutionary with that of a rigorous, sober scholar, a competent museum administrator, and a true pedagogue. Thanks to his candor, which recognized no compromise, whether in personal intercourse or society at large, he not infrequently met with resistance. Yet even those who failed to share his views

were obliged to admit that he was able to maintain his personal dignity and that of his beloved museum. His indefatigable activity and the whole of his rich and genius-tinctured personality will doubtless leave ineradicable traces in the history of Russian science and culture. His works will be rated as *tēmata es aei* in ethnography.

EUGEN KAGAROFF

#### ANTHROPOLOGICAL SCHOLARSHIPS

THE Laboratory of Anthropology at Santa Fe announces the award of the following field-training scholarships for the summer of 1929:

*Ethnology*: Fred B. Kniffen, University of California; Robert A. McKennon, Harvard University; Gordon McGregor, Harvard University; Haviland S. Mekeel, University of Chicago; Maurice A. Mook, Northwestern University.

*Linguistics*: Harry Hoijer, University of Chicago; Berard Haile, Catholic University; Victor E. Riste, University of Washington; William H. Sassaman, University of Chicago.

*Archaeology*: Isabel T. Kelly, University of California; Eva M. Horner, University of Chicago; William B. Bowers, II, Harvard University; Ssu-Yung Liang, Harvard University; Frances E. Watkins, University of Denver.

Alternates have been appointed as follows: *Ethnology*, Vincent M. Petrullo, University of Pennsylvania; *Linguistics*, Robert B. Hitchman, University of Washington; *Archaeology*, Owen S. J. Albert, University of Chicago.

The scholarships are designed to enable properly qualified graduate students who are preparing themselves for professional careers in anthropology to supplement by practical work in the field, the classroom and laboratory instruction which they receive at the universities. Recipients of scholarships will take part in the current investigations of experienced research men; they will have opportunity to become familiar with the use of modern field methods for the collection of data; they will gain experience in the interpretation of these data and in their application to anthropological problems, specific and general. It is planned to offer, year by year, scholarships for work in various branches of anthropology in various geographical areas.

The area for 1929 will be the southwestern part of the United States. Scholarships are offered for training in archaeology, ethnology



*Am. Anthropologist*  
24:4. Dec. 1922.

## ANTHROPOLOGICAL NOTES

JAMES A. TEIT

JAMES A. TEIT, well known to anthropologists through his researches among the Indians of the interior of British Columbia, died after a long illness on October 30, 1922.

James Teit was born on the Shetland Islands. As a young man he came to Canada and finally settled at Spence's Bridge, British Columbia. There he lived near a village of the Thompson Indians and became thoroughly conversant with their language and customs. He took a deep human interest in their affairs and was, in the best sense of the word, a friend and adviser of the Indians.

In 1895, on one of my trips to British Columbia, it was my good fortune to make his acquaintance, and our joint labors extended from that time until his death. He also became a valued collaborator of the Geological Survey of Canada. He collected various data on the natural history and ethnology of British Columbia, and his collections are almost the only ones that give us a picture of the life of the Indians of that region. They are to be found in the museums of Ottawa, New York, and Chicago.

The great value of Teit's contributions to ethnology is due to his painstaking accuracy, his intimate acquaintance with the Indians, and his ability to converse with them in their own tongue. He spoke fluently the Thompson language and conversed easily with the Shuswap and also with the Lillooet. Hence his descriptions of these tribes are full and accurate. Practically our whole knowledge of the material culture, social organization, customs, beliefs and tales of the Salish tribes of the interior of British Columbia is based on his work.

In 1902 and the following years Teit travelled as guide with a number of gentlemen, including Mr. Homer E. Sargent, whose interest in the Indians was stimulated by Teit's accounts and the opportunities he gave to see native life. Mr. Sargent enabled Teit to carry through a very extended study of the distribution of the dialects of the Salish language and also of the adjacent Athapascan group. This work led later on to an investigation of the Tahltan for



mous. One may not marry a blood relative. In such a small tribe all individuals must be related by blood, hence "blood relations" constitute an arbitrarily selected class. At present relatives more distant than those with a common great-grandparent are not recognized. For an exogamous gens all blood relatives of the father through males must be included in the prohibited class, in addition to the recognized relatives of the mother. If the property concept is further developed as suggested, then it is possible that connection with the father's relatives through males will be traced to a greater degree than with any mother's relative. This is a condition of exogamous gentile organization.<sup>3</sup>

Hence it is possible that gentes arise from the Havasupai situation by (1) an emphasis on land inheritance furthering the tracing of the paternal lineage, (2) regularity of patrilocal residence on family lands fixing patrilineal group affiliation, and (3) the extension of kinship recognition in the father's line. This suggested origin is only hypothetical, but it contains no factor unknown to Havasupai society. It might be doubted, however, that it would develop in the face of their acquaintance with Hopi and Navaho maternal principles.

LESLIE SPIER

<sup>3</sup> It is obvious that such a group need not be named.

the Geological Survey of Canada. Teit's map of the early distribution of tribes in British Columbia, Montana, Idaho and Washington, a work that still awaits publication, is fundamental for our knowledge of these regions. At the request of Mr. Sargent, and with the assistance of Dr. H. Haeberlin, he made a thorough study of Salish basketry, which is also still awaiting publication. His last work was a comprehensive description of the ethno-botany and ethno-geography of the interior of British Columbia. These studies were still incomplete at the time of his death.

While he was carrying on all these researches he became more and more interested in the difficulties against which the Indians have to contend, and his warm sympathy for their suffering led him to undertake the organization of the Indian tribes into an association for the protection of their rights. He acted as secretary of the organization which comprised all the tribes of British Columbia, and which has become a potent factor in determining the relations between the Canadian Government and the Indian tribes. Unceasingly he labored for their welfare and subordinated all other interests, scientific as well as personal, to this work, which he came to consider the most important task of his life. When I saw him last, a few weeks before his death, he was hoping to see his work for the Indians crowned with early success, and spoke of his plans to turn again to his ethnographical studies. Truly in him the Indians have lost their most faithful friend. Those who knew him will always remember him as a man of sterling worth. Anthropologists will always regret that it was not given to him to complete his valuable researches. There is nobody equipped as he was and able to complete this task.

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Tahltan Tales. (Ibid., vol. 32, 1919, pp. 198-250; vol. 34, pp. 223-253; vol. 35, 1922, pp. 335-356.)

Two Plains Cree Tales. (Ibid., 1921, vol. 34, pp. 320-321.)

FRANZ BOAS

ROBERT W. WILLSON

It is with deep regret that we record the death, on November 1, 1922, of Robert W. Willson, Professor Emeritus of Anthropology at Harvard University. For the last ten years of his life Professor Willson had been much interested in the investigation of the astronomical features of the Maya Codices, more especially the Dresden manuscript, and devoted a large part of his time to this study. He made valuable suggestions to students in this field and, fortunately, he has left much of his data practically ready for publication. These results will be brought out as a paper of the Peabody Museum of Archaeology and Ethnology.

The following letter regarding Professor Willson has been received by the Editor. From what has just been said it is seen that the writer's fears for Professor Willson's literary remains are, fortunately, not entirely justified.

Editor of the *American Anthropologist*:

May I be permitted to express a few words of appreciation of the late Professor Robert W. Willson of Harvard, because, during the last few years, for a time all too brief, I had the good fortune to visit him whenever I passed through Cambridge, and to discuss the Maya astronomy in which we were both intensely interested, he from the viewpoint of mathematics and exact science, I from the less definite viewpoint of symbolism. I can never forget his kindly, broad, tolerant spirit, a spirit which I believe to be characteristic of the real Harvard, seeking truth in every quarter, and glad to welcome it from any, whether or not it agreed with his own conclusions, striving always to help the student without thought of selfish prestige.

He made my visits a delight which will never pass out of my memory. He found in the Dresden codex, to which he devoted his attention, an astrology of lucky and unlucky days for the populace but an ephemeris of wonderfully accurate calculations of planetary positions, eclipses, solstices and equinoxes, which it is most unfortunate for Maya science that he did not live to complete and publish. It is certainly to be hoped that some astronomer will carry forward the work which he has now laid down and give to students of the remarkable Maya culture the benefit of his researches. But it is for the man, even more than for his work, that I wish to express my deep admiration, and for his departure, my deep regret.

Very truly yours,

STANSBURY HAGAR



Am. Anthropologist, Vol. 15, No. 2, April-June  
1913  
Henry Williamson Haynes

HENRY WILLIAMSON HAYNES died in Boston on February 16, 1912. He was an only son of Nathaniel and Caroline Jemima (Williamson) Haynes, and was born in Bangor, Maine, September 20, 1831. He prepared himself for Harvard College at the Boston Latin School and was graduated from Harvard with the class of 1851.

After teaching for one or two years he studied law and was admitted to the bar in Boston on September 26, 1856.

He became Professor of Greek and Latin in the University of Vermont in 1867, and in 1869 was made librarian of the same University; these positions he held until 1873, when he returned to Boston.

On August 1, 1867, he married Helen Weld Blanchard, daughter of John Adams and of Sarah (Harding) Blanchard; the wedding took place at the American Legation in Paris.

In intellectual life, among the positions held by Professor Haynes were the following: Membership in the board of trustees of the Public Library of the City of Boston, and the Boston School Board; a membership in the Massachusetts Historical Society and for some years in its council; in the Boston Society of Natural History, of which he had been vice-president; in the American Anthropological Association, the American Folk-Lore Society, and the Anthropological Society of Washington; in the Archæological Institute of America, of which he had been a member from its beginning and on whose executive committee he had served. These activities in the learned societies point plainly to his interests in life. Professor Haynes was primarily, in the old-fashioned sense, a man of "the humanities," i. e., "Grammar, rhetoric, poetry, and a study of the Greek and Latin classics," with—added to this—"humanity," which is Anthropology in its broadest acceptation. Professor Putnam defines the last as "man and his works"; possibly in this sense Anthropology may be considered to cover all the reading, writing, and work of this rich lover of mankind.

Of Professor Haynes' work in the broader field of literary activity, an interesting scrap-book gives a varied insight.

In re the future archeologist, mulling over the fallen civilizations of the present, Professor Haynes in the *Boston Courier* in 1860 quotes



*nahāgāpīa* = he goes to live with his wife's people.

*nahāgane'kwāīa* = she goes to live with her husband's people.

*uce'kīhāāgi* = they adopted him (to take the place of a dead relative).

*anōna'i'āāgi* = they adopted him (to take the place of a dead relative).

*cīgāīa* = she is in mourning for her dead husband.

*cīgāīa* = he is in mourning for his dead wife.

*ināgōtiāgi* = they are related.

#### THE TRIBAL TWO-FOLD DIVISION

The tribe has a two-fold division. A member of the phratry that paints with charcoal (*ma'katāi*) is called *uskacā*; a member of the phratry that paints with white clay (*āpyāni*) is called *kīckō'q*.

A child does not enter a phratry till after it has been given a name. The name comes from the father's name unless the right of naming the child is handed over to the mother by the father. If the father is *uskacā* then the offspring will be *uskacā*. If the mother is *kīckō'q* and she has the right of giving the name, then the child is a *kīckō'q*. Again, the child can become a *kīckō'q* if he is given to a grandmother, grandfather, sister's son, or a sister's daughter; the child gets his name from the one in whose hands he falls and if the namer is a *kīckō'q* the child will be a *kīckō'q*. The division is for rivalry in athletics only.

#### CLANS

The clans are:

*nāpīizotcigi* = they who are named from water.

*mā'kwizotcigi* = they who are named from the bear.

*mācāizotcigi* = they who are named from the elk.

*māgezīizutcigi* = they who are named from the bald eagle.

*mā'tegwizutcigi* = they who are named from the tree.

*mīnizutcigi* = they who are named from the berry.

*pāpāgāmōizutcigi* = they who are named from the fox.

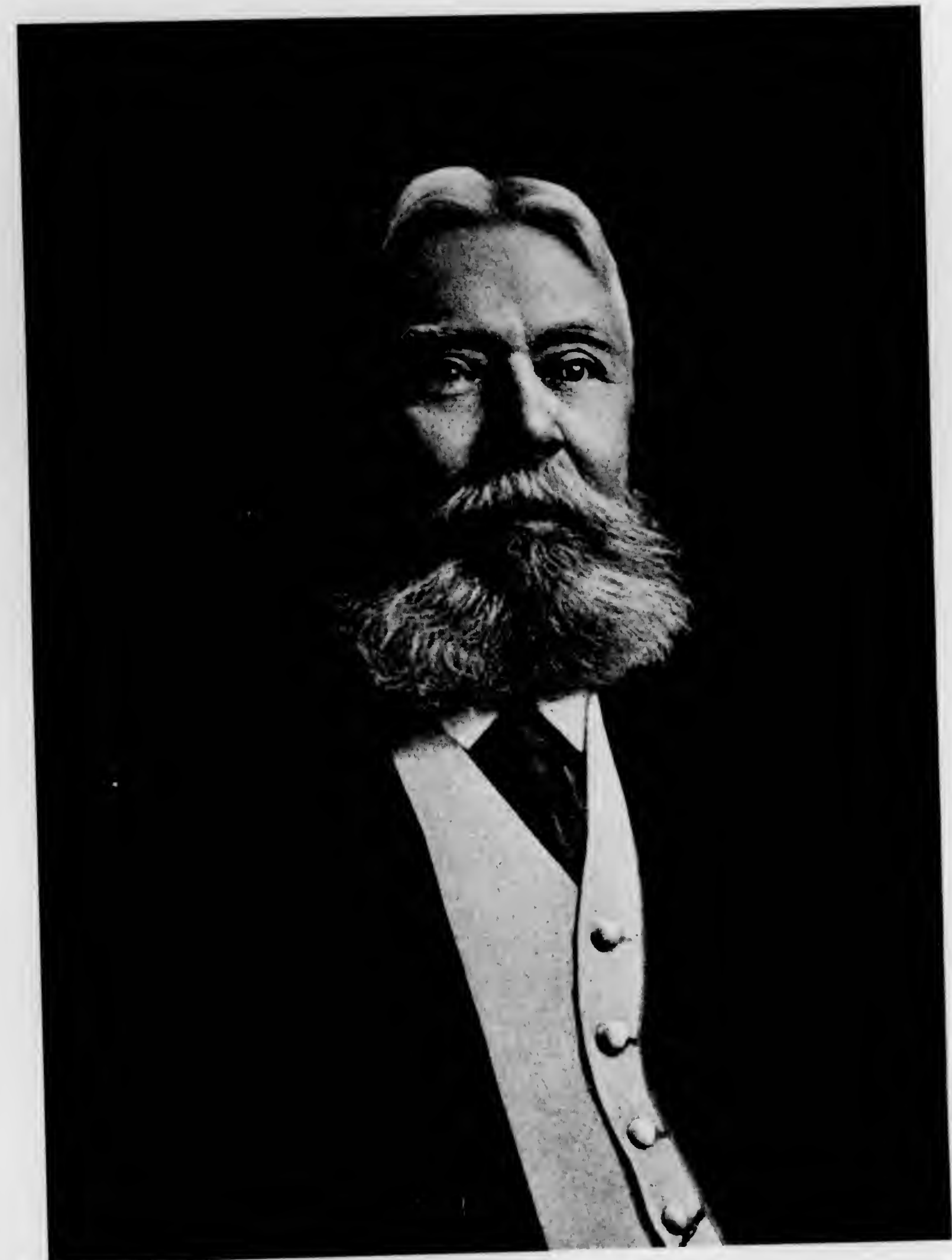
*mā'wāizutcigi* = they who are named from the wolf.

*ānenuswizutcigi* = they who are named from the buffalo.

*mā'tuzāneniizutcigi* = they who are named from the man.

*penūizutcigi* = they who are named from the turkey.

*nāneme'kīizutcigi* = they who are named from the thunder.



*Henry R. Haines.*



Kirke White's *Time* (1803): "Where now is Britain, etc." In 1861 we find him publishing a critique of Dean Milman's *History of Latin Christianity*. This includes a "Scholium" on "Mæcnas . . . qui uxorem millies ducit," exculpating Mæcnas, not without salt.

In the column of "Notes and Queries" in the public prints Professor Haynes was frequently present; his wide reading and exceedingly retentive memory made him an invaluable correspondent for those whose lack of knowledge leads them to seek such hebdomadal aids to the injured.

The classical knowledge of Professor Haynes was, strangely, both broad and deep; a student of literature rather than a philologist he preferred exegesis to etymology; of him could well be said the Terentian "Humani nihil a me alienum puto."

In the old days the test of classical learning was the composition of Latin verse. The following poem written on the occasion of the inauguration of the Memorial Statue of the Latin School Association may show how skillful a master of this art he was; the meter is the Asclepiadean Minor:

Heroum juvenum pro patria mori  
Optantes animae! quale decus damus  
Dignum pro meritis? Prosequimur quibus  
Votis et lacrymis piis?

Hoc marmor vovimus, discipuli tui  
Sculptum, cara parens, artificis manu,  
Fraternis animis, cordibus aemulis  
Grates testificans opus.  
Immortalis honos, Famaque nobilis,  
Mansurumque virens tempus in ultimum  
Nomen, commemorans Gloria laudibus  
Ornabunt statuam sacram.

O Natale Solum! numina dent tibi  
Duris temporibus pectora fortia,  
Prolem magnanimam, talia perpeti  
Caris his Laribus satam.

Professor Haynes was a lecturer on Greek literature, and in 1873 wrote an account of the Westminster play for that year which happened to be the "Phormio."

With all Professor Haynes' appreciation of the value of the old-fashioned classical training for university students, he was no mere "Laudator Temporis Acti," teste the following quotation from the report presented by him to the board of overseers of Harvard College from the



"Committee on Greek" in 1893. The change from recitations to the lecture system was in process of fulfilment and at the time was considered a great innovation.

"How was it possible for any high standard of scholarship, anything better than bare mediocrity, to be expected of the student, when the whole class was held in check by the dead weight of all its dull and lazy members? . . . In the judgment of my classmate, Professor Goodwin, in which I fully concur, in our time fully three-quarters of the recitation hour was wasted, for the better scholars, in hearing those who knew nothing of a subject attempt to talk about it."

From Greek and Latin philology it is but a step to the archeology of classical lands, and nowadays it is but a step farther to the study of paleolithic and neolithic archeology on the one hand and to the archeology of America on the other.

Not so was it in the earlier times of Professor Haynes. King Minos had not yet erected the bridge over which one might pass from Phocis of the polished stones to Delphi of the Sun-god;<sup>1</sup> nor did men recognize the same beauty in the pottery of the White river in Arkansas as in that of the pre-Hellenic Mycenaean layers. All the more honor, then, to those who could look at more than one stone at the same time, and look forward to the time when all things should take their own orderly place in a line determined not by time but by industries.

In American archeology his interest lay largely in the Southwest and the Mexican fields. This is proved by the long excerpts from the reports of the executive committee of the Archæological Institute of America found in his scrap-book. These are a report on Bandelier's work in Mexico in 1881, of Bandelier's researches in New Mexico in 1882 and 1883, and a report (1885) on the contributions of Lewis H. Morgan and the general published work of Bandelier.

The most important of the general articles by Professor Haynes are: "Progress of American Archæology during the years 1889-1899,"<sup>2</sup> and the chapters in Winsor's *Narrative and Critical History of America* on the "Prehistoric Archæology of North America" and "Early Explorations of New Mexico."<sup>3</sup>

In regard to the question of the antiquity of man in America his interest never flagged; he took a middle ground between those who acclaim each skull dug from the deeper depths and each culture not squaring

<sup>1</sup> Cf. *Amer. Jour. Archæol.*, Jan.-Mar., 1913, p. 107, quoting G. Soteriades, Πρακτικά, 1911, pp. 205-235.

<sup>2</sup> *Amer. Jour. Archæol.*, 2d ser., vol. iv, pp. 17 ff.

<sup>3</sup> Winsor's *History*, vol. i, pt. 2, pp. 329 ff., and vol. ii, pp. 473-504.

at first sight with that of the red Indian as evidences of a plurality of races if not of ages of stone on this continent, and those on the other hand who "make all things new" and will not be persuaded though one rose from the dead.

Professor Haynes' conclusions at the end of his chapter on Prehistoric Archæology in Winsor may have been changed during twenty years of research, but as expressed by himself they are still capable of the support of a large circle of students: "That the so-called Indians, with their many divisions into numerous linguistic families, were later comers to our shores than the primitive population . . . that the so-called 'moundbuilders' were the ancestors of tribes found in the occupation of the soil; and that the Pueblos and the Aztecs were only peoples relatively farther advanced than the others."



FIG. 53.—A "chopper" from Ridgefield, Connecticut.

An original contribution of Professor Haynes to the material bearing on early man in America was the discovery by him in New England of a primitive type of stone chopper.<sup>1</sup> This he brought out before the Boston Society of Natural History in the eighties, and he continued to hold much interest and faith in them until his death. These specimens are described in the catalogue which the present writer had the privilege of making in the presence of Professor Haynes, as: "Specimens representing a culture in America possibly more primitive than the paleolithic; they were collected in the majority by Professor Haynes from 1880 to 1890, and, often of white crystalline quartz, are of two types; they may

<sup>1</sup> Cf. *Proc. Boston Soc. Nat. Hist.*, vol. xxi, pp. 382 ff. (Feb. 1, 1882); also *Boston Transcript*, Feb. 2, 1882.



show a prepared cutting edge or a prepared point; the latter class resemble somewhat an Acheuléen '*coup de poing*' of the triangular type; they are found in northern Maine, New Hampshire, and Vermont, as well as in Connecticut, and in Massachusetts in the vicinity of Boston."

Professor Haynes was one of the very few Americans to take an active and a scientific interest in the congresses, discussions, collections, and researches in the field of prehistoric archæology abroad.

During his trip of 1877-1878 he found in Egypt a large number of stone implements of paleolithic type which he exhibited at the Paris Exposition of 1878, receiving a medal in recognition of the researches. Placing these on exhibition he made the following mention of the event in his diary: "Sept. 20, 1878: My forty-seventh birthday; up to anthropological exhibition at nine A.M.; met M. de Mortillet there and put my Egyptian flints into a case." This was Gabriel de Mortillet, perhaps the greatest of the "*préhistoriens*."

Professor Haynes was very fond of meeting people of similar tastes and during his earlier trips abroad, beginning in 1873, he learned to know Dr Blackmore of the famous Blackmore Museum in Salisbury, John Evans, William Ransom, W. Boyd-Dawkins, Reboux, Laville, Baron de Baye, Abbé Ducrost, Perrin (Chambéry), Bonfils (Menton), Bellucci (Perugia), Giglioli, and many others. Visiting sites in company with these men he gathered a great deal of first-hand knowledge that stood him in good stead for nearly forty years.

His social gifts led him to enjoy scientific congresses, and it is worthy of note that he was present at the first Congress of Americanists, held in 1875 in Nancy. The appositeness of this inauguration of the international series of congresses is seen in the proximity of St Dié, whose recent festivities recall that the name "America" first came forth from the little town.

Professor Haynes was an indefatigable reader, and his command of many tongues, ancient and modern, prompted him to form a large library. Many of the books on prehistoric archeology are extremely rare in this country, and Harvard University is fortunate in having received these. They not only illustrate the progress of the science during fifty years, but are not by any means all put on the shelf as to constructive contribution.

It was in his capacity as a lover of specimens that Professor Haynes granted me the privilege of first knowing him well.

At the instance of Professor F. W. Putnam and myself, he consented to pass many hours, delightful for me, in assisting me to write a catalogue

of his European stone specimens as well as some of his trophies from America.

A short analysis of some of his specimens follows: Representing the so-called Eolithic period there are specimens from Alderbury, Stoke Pogis, Bradford on Avon, Windsor Park, Bath, Canterbury, and the vicinity of London. Also there are some of the Thenay flints, so far as is known the only ones in this country. These famous flints, though now discredited, are interesting as illustrating the Eolithic controversy and as representing the oldest claimed human industry until the discovery of the Boncelles specimens by Rutot and the Ameghino "discoveries" in South America.

In the paleolithic field England is represented by specimens from Bedford, Hitchin, and a good collection from the Creswell caves; France provided specimens from the classic station of St Acheul (a station apparently inexhaustible), from the valley of the Somme, and from the great caverns and rock-shelters of the Dordogne. He himself found the eponymous Éclats Levallois in and around Paris. Then there are the remarkable Egyptian paleoliths mentioned above.

His neolithic collection was exceedingly numerous and from widespread sites: Salisbury, Reculver, Torquay, Dunstable, Bath, Derby, the Thames valley, and other English places; Cæsar's Camp near Dieppe, and the famous Grand Pressigny; Scandinavia (Helsingborg and Lake Mälaren in Sweden, and Valsgard, Solager, and Kørstør in Denmark); Italian sites such as Perugia, Verona, Lake Trasimene, Bologna, Orvieto, Umbria, the Campagna, Albano, Sicily, and Gargano; Greece, Switzerland, and Germany, as well as later Egyptian sites—all these contribute a collection of stone implements that is equaled by not more than one or two expositions in the United States.

The set of beautiful pygmy flints from Egypt is only one of the elements worth particular notice in the collection. There are in all sixty-seven sections in the collection, and many minor subdivisions. In the Egyptian material there are forty-one trays; in addition there are some bronzes and considerable pottery.

These objects constitute only a part of what Professor Haynes gathered during his wanderings. Four beneficiaries received his collections: the prehistoric objects and all the books relating to them he left to the Peabody Museum of Harvard University; the Etruscan, Greek, and Roman vases, with the ancient coins and medals, to the Classical Department of Harvard University; the Egyptian collection, excluding the prehistoric flints, to the Museum of Fine Arts in Boston, and the



fossils, minerals, and numerous other specimens to the Boston Society of Natural History.

In spite of his wide interests abroad, Professor Haynes by no means neglected his own immediate neighborhood, as witness the hundreds of archeological specimens from New England included in the collections in the Peabody Museum. He was a man whose mind and heart were everywhere at home and with whom every man's mind and heart might find a home, if so be that they were wise, sound, and of good report.

Of my personal relations with him I can only say that there is but one thing for me to regret: that I wasted so much time before my short acquaintance with him began; the year that followed was one of increasingly intensive admiration and affection.

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one Ecuadorean province. In Manabi, an arid region extending from the equator to Guayaquil, the author finds a civilization but little affected by Incasic influence. Stone seats form a special feature of Manabian archeology. They are found in great numbers, but only on Cerro de Hojas and several neighboring hills within an area not more than twenty miles in diameter. So far as Cerro de Hojas is concerned the seats were found only in the rooms of the ruined houses or *corrales*. The author enumerates about a dozen types of stone seats: he believes them to have been ceremonial. Of perhaps even greater significance are the stone bas-reliefs found principally on Cerro Jaboncillo and likewise in the *corrales*. The author divides these sculptured slabs into nine groups. The first five groups represent human female figures; in the sixth and seventh the sex is doubtful; the eighth is a complex problematic stylistic life form; and the ninth is purely diagrammatic. Under ceramics considerable space is given to figurines, human heads, whistles, and spindle whorls. The latter are decorated with incised patterns but do not compare in workmanship with the finer whorls from Colombia and the valley of Mexico. Although hunting for golden treasure was not the object of the expedition, the author admits being disappointed in the number and value of metal objects found. Each volume has an Appendix with long extracts from early Spanish authors, which with the comprehensive bibliography in the first volume brings the reader into close touch with the anthropology of Ecuador.

GEORGE GRANT MACCURDY.

**Dr Paul Topinard**, the noted French anthropologist, died at Paris on December 20, 1911. Topinard was born at l'Isle-Adam (Seine-et-Oise), November 4, 1830, and began his studies at the Collège Ste-Barbe in Paris, but soon was compelled to interrupt them to accompany his father to the state of New York, where the latter had extensive estates; near which, at Delhi, young Topinard was sent to school. Later he went to Philadelphia, where his time was divided between the public schools and the Augustins, and returning to New York he entered a commercial school, remaining two years. But business pursuits were not to Topinard's liking. He returned to Paris in 1848; in 1853 he was an interne of the hospitals of Paris, and became a doctor of medicine in 1860. Through the influence of Paul Broca, Topinard relinquished his practice and on the creation of the anthropological laboratory at the École des Hautes-Études, was appointed adjunct director. When the *Revue d'Anthropologie* was founded by Broca in 1872, Topinard became his collaborator, and on



his information from Blas Valera without giving the latter credit. The Appendix also includes extensive notes on the names Quichua and Aymara, architecture and arts of the Incas, the Inca drama of Ollantay, and Inca folklore.

While much attention has been paid to Peru on the south and Mexico and Central America on the north, the field between has until recently

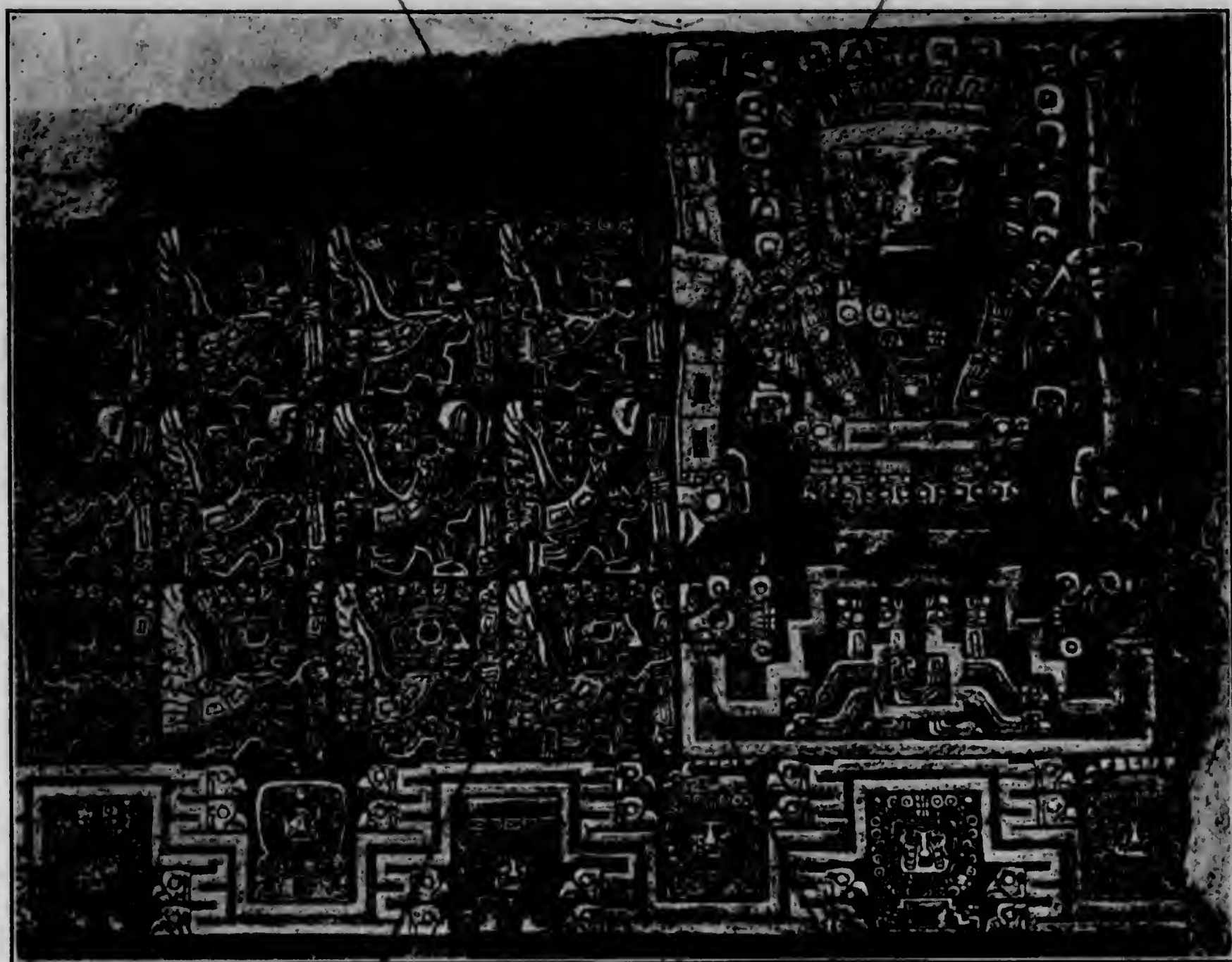


FIG. 19.—Portion of the sculptured figures on the Puerto del Sol, Tiahuanacu, Peru, worked up by Miss Adela C. Breton from a photograph in the Bolivian Government's Album.

received scant notice. Thanks to Mr George G. Heye, who financed the expeditions, and to Prof. Marshall H. Saville, who directed them, the archeological world now has two splendid volumes by Professor Saville: *Contributions to South American Archeology, Antiquities of Manabi, Ecuador* (Irving Press, N. Y.), the second volume appearing in 1910. Professor Saville distinguishes nine centers of ancient culture, five in Ecuador and four in Colombia, these of course in addition to the intrusive Inca culture. The two volumes,<sup>1</sup> as the title indicates, are confined to

<sup>1</sup> The first volume was reviewed for this journal (x, 122, 1908) by Prof. W. H. Holmes, who also reproduced some of the more important illustrations.

the opening of the École d'Anthropologie in 1876, under Broca's direction, Topinard was appointed professor, with Bertillon, Hovelacque, Mortillet, and others, thus becoming one of the advance guard who created and continued that scientific and philosophic movement which arose with the founding of the Société d'Anthropologie. In the same year, Topinard's book, *L'Anthropologie*, appeared, and met with such remarkable success that it passed through many editions and was translated into several languages. On Broca's death in 1880, Topinard was unanimously elected general secretary of the Société d'Anthropologie. His writings on the



PAUL TOPINARD—1830-1911

subject of anthropology alone are too numerous to mention here, but attention should be directed to his masterpiece, *Traité d'Anthropologie*, published in 1885, his *Éléments d'Anthropologie générale*, and *L'Homme dans la Nature*. Topinard was a zealous student of all branches of anthropology, and endeared himself to his fellows by his amiability and his generosity in parting with his store of knowledge gathered during many active years.

**Augustus Henry Keane.**—The following notice of the life and work of Dr A. H. Keane of London, by Sir Edward Brabrook, is extracted



from *Man* for April, 1912. Dr Keane was born in Cork, June 1, 1833, and died February 3, 1912.

"The science of ethnology has lost a devoted student by the death of Dr Keane. For it he made great sacrifices in early life, to it he devoted high intellectual qualities, a rare linguistic faculty, and untiring industry. He began to take part in the meetings of the Anthropological Institute in 1879, in which year he contributed a monograph on the relations of the Indo-Chinese and inter-Oceanic races and languages, and discussed a paper on a similar subject by Colonel Yule. He was an eloquent speaker, and joined in our discussions with much effect. At the anniversary meeting in January 1880 he was elected a member of the council. In 1883 he prepared at the invitation of that body and read to a special meeting of the Institute a paper on the Botocudos, two males and three females of that people being present. In the same year he was appointed Professor of Hindustani at University College. In 1884 he read to the Institute a paper on the ethnology of the Egyptian Sudan, and in 1885 one on the Lapps, a group of whom were exhibited on the occasion. At the anniversary in January 1886 he was elected a vice-president of the Institute, a distinction which he highly valued, though the vice-presidents were not frequently called upon for their services while Sir Francis Galton was president. Professor Keane's term of office expired at the anniversary of January 1890. After that time he frequently contributed to the journal of the Institute and to *Man* critical reviews of new anthropological works. In 1896 the second edition of his standard treatise on ethnology was issued from the Cambridge University Press. In it he discussed separately the fundamental ethnical problems and the primary ethnical groups. Under the first head were included the physical and mental evolution of man, the antiquity of man, and the specific unity and varietal diversity of man. Under the second head he laid down a division of man into four primary groups, which he designated Homo Æthiopicus, Mongolicus, Americanus, and Caucasicus. This was followed in 1899 by *Man, Past and Present*, in which the origin and interrelation of those groups are discussed in further detail. In 1900 he published a timely and enlightening work on *The Boer States: Land and People*. His contributions to encyclopedias and guides and other geographical works are too numerous to mention. His eminent services to science and literature procured for him the corresponding membership of the Anthropological Societies of Italy and of Washington, the degree of LL.D., and the grant [in 1897] of a pension on the civil list."



JUAN B. AMBROSETTI

By C. W. MEAD

**D**R. Juan B. Ambrosetti, director of the Ethnographical Museum of the Faculty of Philosophy and Letters in Buenos Aires, Argentina, died May 28, 1917.

Dr. Ambrosetti stood in the foremost rank among anthropologists, and his death at the early age of fifty-two years is a great loss to science. From youth his bent was strongly toward science and art, and although a man of very considerable wealth he was, throughout his life, an indefatigable worker.

At the time Dr. Ambrosetti took charge of the Ethnographical Museum its entire material consisted of a small collection of bronzes, donated by Dr. Indalecio Gomez. Today the collections reach 20,000 catalogue numbers. Quite a large part of this material he collected himself in the field.

Dr. Ambrosetti's most valuable contributions to archaeology are his works on the Calchaqui region of his own country. These give the results of his field work during his various expeditions. These expeditions he always financed himself. His writings have a natural beauty of style, and in his descriptions of the woods, the desolation of arid plains, and of waterfalls we feel his love of nature and of art.



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FIG. 66.—Juan B. Ambrosetti.



Dr. Ambrosetti always took a prominent part in the meetings of the International Congress of Americanists and will be much missed at future meetings. He was a man who made friends wherever he went, and has left many in this country, in different branches of science, who admired him as a man, and respected him for his scientific attainments. It has been said of him that "in his life of affection and teaching he strove to make friends of his disciples and disciples of his friends."

He was an official delegate of the Argentine government to the Second Pan American Congress at Washington, D. C., in December, 1915-January, 1916, where he was also the accredited delegate of the faculty of philosophy and literature, and the faculty of agronomy and veterinary medicine of the National University of Buenos Aires; Museum of the University of La Plata; University of Cordoba; Museum of Natural History of Buenos Aires; Board of American History and Numismatics; Argentine Scientific Society; and the Argentine Geographical Institute. He was president of the first session of the congress.

During the last year or two Dr. Ambrosetti had been preparing plans for a new museum building which should be in the true Tiahuanaco style. The collections of the Ethnographical Museum are housed in the basement of the building occupied by the Faculty of Philosophy and Letters, where the space is entirely inadequate for their display, and consequently a large part of the material is in storage. As he did not live to do this work it is to be hoped that the faculty will carry out his idea and give his name to the museum as a fitting tribute to one of the greatest scientific men his country has produced.

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<sup>1</sup> Nos. 1-60 were compiled by Dr. Ambrosetti and published in Buenos Aires in 1904. Nos. 61-76 are from a private letter from Dr. Robert Lehmann-Nitsche.

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(Se describen las ruinas de esta antigua población calchaquí, dándose detalles de las construcciones, morteros públicos, represa para almacenar agua, sepulcros y cementerios de niños, con mención de los resultados obtenidos en las excavaciones, urnas funerarias, pucos, etc., y un principio de clasificación de las mismas. También se describen algunos petroglifos.)

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Síntesis presentada á la XII sesión del Congreso de Americanistas de París en Setiembre de 1900 y publicada en sus Comptes-Rendus.

43. Notas de Arqueología Calchaquí (I. a serie). Boletín del Instituto Geográfico Argentino. Tomos xvii, xviii, xix y xx, 240 páginas con grabados, 1897 á 1899.

Este trabajo fué publicándose paulatinamente, describiéndose en él un gran número de objetos arqueológicos hallados en la región Calchaquí y numerosos datos de observaciones personales y del Folk-Lore de los actuales habitantes.

Las treinta y tres notas de esta primera serie tratan de las siguientes materias:

- I. Ídolos funerarios; II. Ídolo de significación Incásica; III. Amuletos ó ex-votos para el buen parto; IV. Amuletos para el amor (Huacanqui ó Cayan carumi); V. Ídolos femeninos de piedra? La Pacha Mama?; VI. Ídolo Tanga-tanga: Trinidad india; VII. Vasos votivos antropomorfos; VIII. Representaciones de Tigres; IX. Vasos ornitomorfos; X. Illas ó amuletos para los animales; XI. Figuras zoomorfas; XII. Divinidad Catequil (?); XIII. Morteros zoomorfos de piedra; XIV. El Peinado y el Tocado. Apéndices. XV. Ídolos falicos de piedra; XVI. Cetros de mando; XVII. Placas pectorales y Discos de bronce; XVIII. Los Incas no dominaron la región Calchaquí; XIX. Campanas ó tantanes de bronce; XX. Un bronce que no es Calchaquí; XXI. Ídolos músicos; XXII. Thoquis ó insignias de mando hechas de piedra; XXIII. Amuleto ofidiofálico para la lluvia; XXIV. E.

Símbolo del Suri; xxv. Muyunas ó torteros de huso; xxvi. Fetiches animales; xxvii. Un curioso sombrero Calchaquí; xxviii. Nuevos ídolos funerarios y objetos antropomorfos; xxix. Fumaron en pipa los Calchaquíes?; xxx. Cuchara de madera; xxxi. El Símbolo del Sapo; xxxii. Una nueva forma de peinado; xxxiii. Un producto de fundición Calchaquí.

Y además contiene las siguientes invocaciones en quichua moderno: Para sembrar. Para hilar. Para señalar cabras. Para buscar el espíritu. Para andar en el cerro. Para cazar vicuñas. Para carnear. Para que no se pierda el ganado. Para enterrar un muerto. Para beber.

44. Rastros etnográficos comunes en Calchaquí y México. Anales de la Sociedad Científica Argentina. Tomo LI, 12 ps., 1901.

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(Se describe la alfarería fina de color rojo pintada de negro y la color ante con rojo, azul y blanco, y también una gran urna funeraria decorada con un símbolo antropozoomorfo.)

46. Hachas votivas de piedra (Pillan Toki) y datos sobre rastros de la influencia Araucana prehistórica en la Argentina. Anales del Museo Nacional de Buenos Aires. Tomo VII, 15 ps. con una lámina y un grabado, 1901.

(Se describe un hacha con grafitos de la Pampa Central del Museo Nacional.)

47. Un nuevo Pillan Toki. Revista del Museo de La Plata. Tomo x, 4 ps. con una lámina, 1902.

(Se describe otra hacha de piedra con grafitos de Choele-Choele del Museo de La Plata.)

48. Algunos vasos ceremoniales de la región Calchaquí. Anales del Museo Nacional de Buenos Aires. Tomo VII, 9 pgs. con grabados, 1902.

(Se describen: un vaso con borde recortado en terrazas, otro con tabique interno y otro con impresiones de basketería.)

49. El sepulcro de La Paya. Recientemente descubierto en los valles Calchaquíes. Anales del Museo Nacional de Buenos Aires. Tomo VIII, 30 ps. con grabados, 1902.

(Descripción del material arqueológico extraído de ese sepulcro que perteneció á un jefe: adornos de oro, un hacha de bronce con mango de madera, varios tipos de alfarerías con simbolismo nuevo y otros objetos. Al final se hace un estudio iconográfico comparativo de los nuevos elementos simbólicos con los ya conocidos y se señala la identidad de la alfarería con la hallada en el Norte de Chile.)

50. Datos arqueológicos sobre la Provincia de Jujuy (antigüedades Calchaquíes). Anales de la Sociedad Científica Argentina. Tomos LIII y LIV, 97 páginas con grabados, 1902.

(Descripción de material arqueológico procedente en su mayor parte de Casabindo y Santa Catalina, con datos sobre mates pirograbados, tablitas de ofrendas, alfarerías, objetos de piedra, madera, bronce y hueso, y



- sobre el Folk-Lore de los actuales habitantes, entre esto: el baile de los Chunchos.)
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  54. Los pucos pintados de rojo sobre blanco del Valle de Yocávil. Anales del Museo Nacional de Buenos Aires. Tomo IX, 13 ps. con grabados, 1903. (Se describen 18 objetos de este tipo, los únicos hallados hasta hoy, y el desarrollo de su simbolismo. El material pertenece á los Museos Nacional y de La Plata.)
  55. Cuatro Pictograffas de la región Calchaquí. Anales de la Sociedad Científica Argentina. Tomo LVI, 13 ps. con grabados, 1903. (Se describen, pictograffas de las Quebradas de las Conchas, Bodega y Chuzudo (Quilmes), Provincias de Salta y Tucumán.)
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  57. Insignia lítica de mando de tipo chileno. Anales del Museo Nacional de Buenos Aires. Tomo XI, 8 pgs. con grabados, 1904. (Descripción de una especie de maza de piedra del Sur de Mendoza.)
  58. Informe del Delegado de la Universidad de Buenos Aires al Congreso de Americanistas, XIII Sesión de Nueva York. Revista de la Universidad de Buenos Aires, tomo I, 42 páginas, 1904.
  59. Apuntes sobre la Arqueología de la Puna de Atacama. Revista del Museo de La Plata. Tomo XII, 30 ps. con 4 láminas, 1904. (Descripción del material del Museo de La Plata, con un estudio especial sobre los escarificadores de madera, y datos sobre Pictograffas y Petroglyfos como el de Antofagasta, Peñas Blancas, Infieles, etc.)
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  61. Exploraciones arqueológicas en la Pampa Grande (Provincia de Salta).

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  63. Exploraciones arqueológicas en la ciudad prehistorica de "La Paya" (Valle Calchaque, provincia de Salta), campañas de 1906 y 1907. Publicaciones de la Sección Antropológica de la Facultad de Filosofía y Letras de Buenos Aires. No. 3, 534 páginas. Buenos Aires, 1908.
  64. La bolsa de una média prehistórica ? de Vinchina (provincia de la Rioja) (Nota arqueológica). Anales del Museo Nacional de Buenos Aires. Tomo XVII. p. 215-223. 1908.
  65. Clava lítica de tipo peruano del territorio del Neuquen. Anales del Museo Nacional de Buenos Aires. Tomo XVII p. 229-231. 1908.
  66. La Facultad de Filosofía y Letras de la Universidad, Nacional de Buenos Aires y los estudios de arqueología americana. Anthropos Tomo III, p. 983-987. 1908.
  67. La question Calchaquie et les travaux de la Faculté de philosophie et lettres de l'Unuversité Buénos Aires. Verhandlungen des XVI Internationalen Amerikanisten Kongresses. Wien 1908.
  68. Congreso internacional de Americanistas Viena (1908)—xvi sesion. Memoria del delegado de la Universidad Nacional de Buenos Aires. Revista de la Universidad de Buenos Aires. Tomo XI, p. 87-115. Buenos Aires 1909.
  69. Un objeto raro de alfarería de Misiones. Apuntes de historia natural, I, p. 124-126. Buenos Aires 1909.
  70. Un documento gráfico de etnografía peruana de la época colonial. Publicaciones de la Sección Antropológica de la Facultad de Filosofía y Letras de Buenos Aires. No. 8. 27 páginas. Buenos Aires 1910.
  71. Idoló zoomorfo del Alto Paraná. Contribucion á la etnología americana. Anales del Museo Nacional de Buenos Aires. Tomo XXI, p. 385-393. 1911.
  72. Nuevos restos del hombre fosil argentino (Presentacion de dos cráneos del hombre de Guerrero, Provincia de Buenos Aires). International Congress of Americanists Proceedings of the XVIII Session, London, 1912, p. 5-8.
  73. Memoris del Museo Etnográfico 1906 á 1912. Publicaciones de la Sección Antropológica de la Facultad de Filosofía y Letras de Buenos Aires. No. 10, 47 páginas. Buenos Aires, 1912.
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## BOOK REVIEWS

### METHODS AND PRINCIPLES

*An Introduction to Social Psychology.* CHARLES A. ELLWOOD. Appleton and Co.: New York, 1917.

Social psychology or psycho-sociology is for Dr. Ellwood the foundation not only of sociology, but of all the social sciences at large. Its prominence is based on the psychological nature of its interpretations (p. 8). It is a central theoretical thesis of Ellwood that all social life is psychic in the sense that it presupposes the mental interaction of the individuals that make up the social group. He repudiates the idea of a super-individual group-soul and makes the significant statement that the group cannot be understood apart from its individuals, nor these apart from the group (p. 19). The psychological terms in which social life is to be interpreted he designates as those of "inter-stimulation and response" (p. 324). It is the interaction of the individual psyches that brings about social evolution.

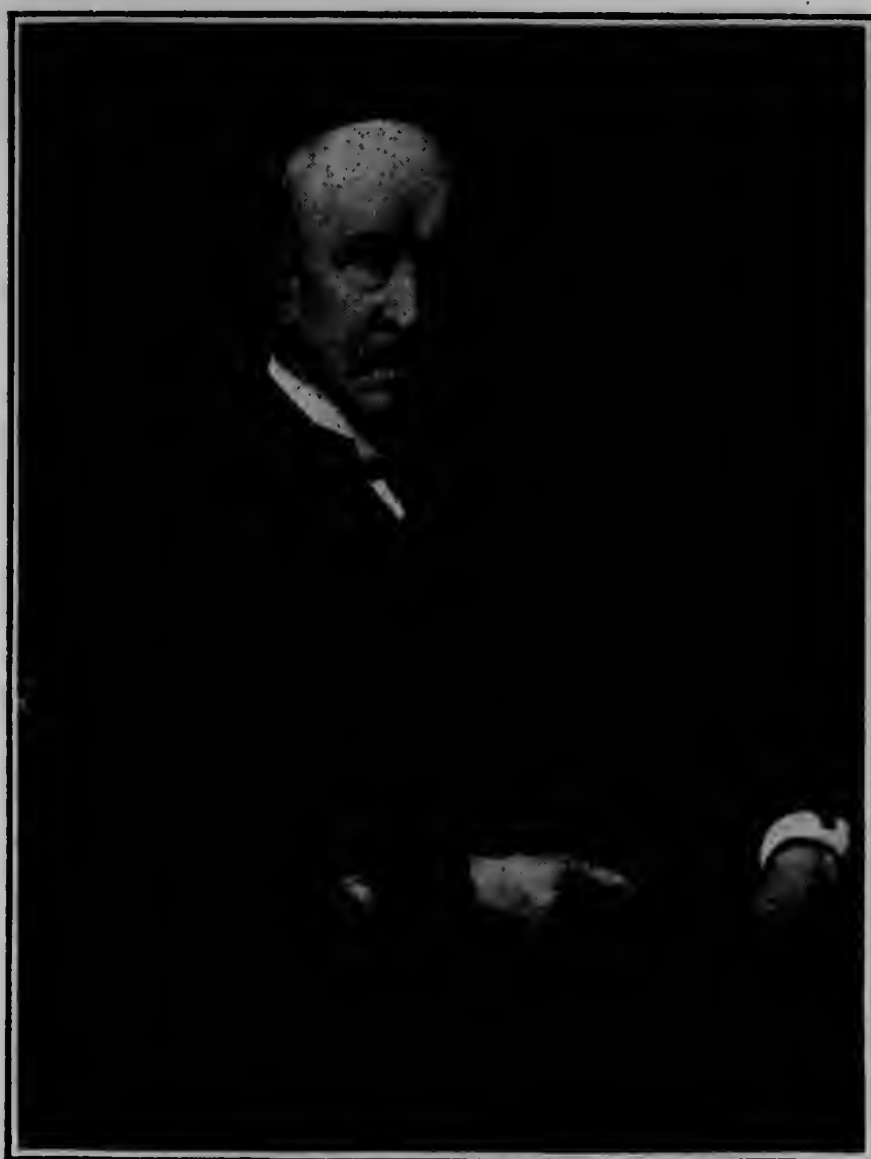
It is important for the understanding of Ellwood's line of thought that his idea of the psychological nature of social life makes certain definite implications. While he alleges to assume a purely pragmatic attitude towards the subject matter of psychology by including in it the states of consciousness as well as the neural processes (p. 8-9), he at once implies a factor which commits his whole point of view to that of evolutionary psychology. He takes it for granted that "modern psychology bases itself upon modern biology" (p. 20) and without the least attempt to examine this dogma critically he proceeds to transfer the biological principle of adaptation and of natural selection into his psychology. From this position alone is Ellwood enabled to deduct his psychological generalizations and to evaluate social processes in a scheme of higher and lower stages. Indeed, without the idea of psycho-social evolution this type of social psychology would be an absurdity.

In this way the question of the relation of social to organic evolution gains especial importance for Ellwood's argument. In the second chapter of his book he is quite explicit on this question. Social life is a superstructure of the organic. By the natural process of the survival of the fittest the organic has developed always higher forms of adaptation



ANTHROPOLOGIC MISCELLANEA

**William Graham Sumner.**—It was said of Charles Darwin that he was the last great "naturalist," that is, the last man who knew the whole field—who was a geologist, biologist, botanist, and all the rest, and capable of the transcendent scientific effort of a great synthesis comprehensive within what was once called "natural history." Similarly of James Dwight Dana, it is said that he was the last great geologist; now we have structural geologists, paleontologists, physiographers, as special kinds of geologists, or, at least, as intellectual descendants of those who



William Graham Sumner.

bore the once comprehensive term. In like manner it could be asserted that William Graham Sumner was the last great anthropologist—taking the term in his own broad sense, for he defined anthropology as the science that makes a study of the human group, of its relation to its habitat, and of membership in it. We now have somatic anthropologists, prehistoric archaeologists, economists, political scientists, sociologists, and so on; but Sumner knew a great deal about all the social sciences, and was an expert on several. I do not mean that Sumner was equally at home in all these lines—even Darwin's acquirements

were uneven,—but that he had this comprehensive background to his work. I do not mean that he spread out beyond the field of the social sciences as some of our venerable scientific fathers have done, but that he covered more completely and thoroughly than anyone is likely soon again to do the several divisions of this field. And when one realizes the amount of teaching and administrative work Professor Sumner did, as compared for example with some of the non-teaching scientists, the marvel of his comprehensiveness increases.



STEENSBY, H. P. Contributions to the Ethnology and Anthropogeography of the Polar Eskimos. Reprinted from "Medelelser om Grönland," vol. xxxiv. Copenhagen: Printed by Bianco Luno, 1910. 8°, (253-) 405 + 1 pp., ills.

SWANTON, JOHN R. Haida Songs. [Reprinted in advance from Publications of the American Ethnological Society, vol. III.] New York, 1910. 8°, 63 pp.

THURSTON, EDGAR; assisted by RANGACHARI, K. Castes and Tribes of Southern India. Madras: Government Press, 1909. 8°, 7 vols., ills.

VAN GENNEP, ARNOLD. Religion, Mœurs et Légendes. Essais d'Ethnographie et de Linguistique. Paris: Mercure de France, 1909. 16°, 318 pp.

*Contents:* Totémisme et culte des enseignes à Rome. Tabou, totémisme et méthode comparative. Du chamanisme. Pourquoi on se fait Musulman au Bengale. Le Druidisme était-il une institution Celtique? À propos de Jeanne d'Arc. L'interprétation "astrale" des mythes et légendes. L'idée d'évolution dans les légendes des demi-civilisés. Le masque de fer, une solution nouvelle. La valeur historique du folk-lore. Y a-t-il progrès de la civilisation? Antiquités et chansons de Haute-Savoie. L'origine des runes et des alphabets. Une nouvelle écriture Nègre. Le bovaysme collectif (11). Essai d'une théorie des langues spéciales.

VAN GENNEP, A. La formation des Légendes. Bibliothèque de Philosophie scientifique. Paris: Ernest Flammarion, 1910. 12°, 326 pp.

WADDELL, WILLIAM. Red-man; or, the destruction of a race. St Louis: Wm. Waddell, 1909. 12°, 155 pp.

WATERMAN, T. T. The Religious Practices of the Diegueño Indians. University of California Publications in American Archaeology and Ethnology. Berkeley, 1910. Vol. 8, no. 6. 8°, pp. 271-358, pls. 21-28.

WEAD, CHARLES KASSON. Music and Science. Address of the Retiring President. Read before the Philosophical Society of Washington, January 15, 1910. (Extract from the Bulletin of the Society, vol. xv, 8°, pp. 169-187.)

ZEISBERGER, DAVID. History of Northern American Indians, edited by Archer Butler Hulbert, and William Nathaniel Schwarze. In Ohio Archeological and Historical Quarterly, vol. xix, Jan. and Apr., 1910, nos. 1 and 2. Columbus, Ohio: Published by the Society Office. 8°, 189 pp. (Price \$1.50.)

Professor Sumner was one of the first two or three prominent economists in this country, and he was the first to teach sociology. The major interest of his career lay apart from physical and prehistoric anthropology toward the disciplines based upon ethnography and history. He never did any "field-work" so far as I know. Nor did he, on the other hand, display any of those leanings toward metaphysics and the intuitional which have vitiated so much work in the social sciences. He repelled all this with the greatest scorn and had a strong leaning toward the natural sciences, often regretting his defective training in these lines. But it would not be fair to say that he was a closet-philosopher, for he possessed a wide and accurate knowledge of one part, at least, of the field — the economic and political organization of America and Europe.

The comment used to be heard that Sumner had made a great mistake in giving up political economy in the nineties, and some could not understand how he could surrender a specialty in which he stood so high unless his working days were over. But those who heard his courses in the Science of Society, and, at length, those who read the "Folkways," had no doubt that he had moved from the narrower into the wider field; and those who came to know him better learned that the general science of society, rather than any one of its branches, had been his interest from the beginning. He left behind him a great mass of materials and manuscript, as the reader of the preface to "Folkways" could infer, which witnessed to his absorption in his earliest and latest scientific interest.

The dominant note of Sumner's thought was hard common-sense; this was coupled with a thoroughgoing intellectual honesty and with the courage of conviction. Such qualities have not failed of their effect, even though he did not live to aid sociology in attaining to the vertebrate stage. For generations of Yale men carry about with them, in their personal "mores," the healthy intellectual ideals inculcated with unflinching insistence by this great teacher and man. Sumner not only studied the science of the *anthropos*, but he knew men, and he made them.

ALBERT G. KELLER.

YALE UNIVERSITY

#### On Phonetic and Lexic Resemblances between Kiowan and Tanoan.

—Certain phonetic and lexic affinities between Kiowan, Tanoan, and also Shoshonean, have been pointed out by Buschmann, Gatschet, and others. In examining the Kiowa vocabulary obtained by Mr James Mooney and published in the 17th Annual Report of the Bureau of American Ethnology, part 1, pages 391-440, the writer notes to his surprise how strong these Kiowan-Tanoan similarities are. Should it be finally



proved that these two "stocks" are really related, either genetically or by mixing, the conclusions would be most interesting, since history traces the migrations of the Kiowa from their former homeland at the headwaters of the Missouri river, while the Tanoans are in every respect a typical Pueblo people.

The Kiowa sounds as recorded by Mooney are: a, ă, â, ä, e, i, ĭ, o, u, ŭ, (û), ai, uă, iă, ia, äo, ñ (sign indicating nasalization of the preceding vowel), b, d, g, h, k, k', k', kw, l, m, n, p, p', s, t, t', w, y, z. The Tanoan sounds, dialect of Taos pueblo, are: a, a<sup>n</sup> (<sup>n</sup> indicating nasalization of the preceding vowel), ä, ä<sup>n</sup>, i, i<sup>n</sup>, â, â<sup>n</sup>, u, u<sup>n</sup>, ö, ä<sup>n</sup>ĩ, ä<sup>n</sup>ũ, äĩ, ä<sup>n</sup>ĩ, u<sup>n</sup>ĩ, äĩ, äũ, iă<sup>n</sup>, iă, iũ, äĩ, üă, üĩ, öă, öĩ, b, d, g, h, j (= y), k, k', k', kw, l, l, m, n, p, p', p', s, t, t', t', ts, ts', w, x, xw. Besides k, p, t, Mooney mentions k' ("explosive"), p' ("aspirated"), and t' ("aspirate"). Tanoan possesses in addition to k, p, t also k, p, t exploded with much breath (written k', p', t') and k, p, t grunted, i. e., accompanied by simultaneous closure of the glottis (written k', t', p').

In the brief vocabulary the following striking lexic resemblances were noted. The Kiowa words and their meaning as recorded by Mooney stand first together with a reference to the page of the Report cited above on which they occur; Tanoan forms taken from the Tiwa, Tewa, or Jemez (Towa) languages follow.

a, a game, 433: Tewa e, a game.

ă-, I, personal pronominal prefix on many verb forms: Tewa â-, Tiwa â-, I.

äă', I come or approach, 391: Tewa ä<sup>n</sup>ä<sup>n</sup>, Tiwa ä<sup>n</sup>, Jemez i<sup>n</sup>, to come.

â'dal, hair, âdal- in composition sometimes head, 391: Tewa p'o, Tiwa p'i-, head. For the loss of p'- compare Kiowa o'nto, five (see below).

ai'deñ, leaves, foliage, 393: Tiwa ö, Tiwa (Piro dialect, Bartlett's vocabulary) a-o-, leaf, Jemez ä, leaf.

an, a track, 394: Tewa a<sup>n</sup>, Tiwa ie<sup>n</sup>n-, a track.

ä'ñgya, he sits, 394: Tewa ä<sup>n</sup>, to sit.

anso', anso'i, a foot, 394: Tewa a<sup>n</sup>, Tiwa ie<sup>n</sup>n-, Jemez o<sup>n</sup>ts'ac, a foot.

a'täntai', salt, 396: Tewa a, salt.

be-, imperative pronominal prefix (?) in bemă'!, lie down!, 408: Tewa bi-, imperative pronominal prefix.

bon, crook, in pabo'n, fur crook, crooked lance wrapped in fur, 415: Tewa mbu<sup>n</sup>, crook.

bot, stomach, belly, 397: Tewa pu, stomach, belly, buttocks.

dom, dâm, earth, under in composition, 400: Tewa na<sup>n</sup>, Tiwa na<sup>n</sup>m-, earth, Jemez dââž, earth.



*Am. Anthropologist*  
24:1. Jan.-March 1922.

## ANTHROPOLOGICAL NOTES

EMILE CARTAILHAC

PROFESSOR EMILE CARTAILHAC of Toulouse died at Geneva on November 25, 1921, at the age of seventy-six years. He had gone to Geneva only a few days before as the guest of Professor Eugene Pittard and to deliver a public lecture at the university. The lecture was so well received that Professor Cartailhac was invited to remain



EMILE CARTAILHAC

(Born at Marseilles, Feb. 15, 1845; died at Geneva, Nov. 25, 1921)

and deliver additional lectures. While preparing for the second lecture, he suffered a stroke from which he never regained consciousness. After appropriate funeral services conducted by the university, the burial took place at the family seat at Camarès (Aveyron).

In Professor Cartailhac the science of prehistoric archaeology has lost one of its ablest exponents. He possessed to an unusual



C. W. BISHOP, The ritual bullfight and its connection with the growing of irrigated rice.

ESTHER SCHIFF, The deer hunt in the Southwest.

T. T. WATERMAN, The Shaker religion of Puget Sound.

GLADYS REICHARD, Complexity of rhythm in primitive art.

At the joint meeting with the Maya Society the following papers were presented:

WILLIAM E. GATES, Activities of the members of the Maya Society during 1921 and plans for 1922.

S. K. LOTHROP, The first occurrence of the word Maya.

S. G. MORLEY, The earliest historical Maya dates.

M. H. SAVILLE, The discovery of the east coast of Yucatan by Juan de Grijalva in 1518.

WILSON POPENOE, Regional differences as shown by the motives in huipil decoration in the highlands of Guatemala.

WILLIAM E. GATES, Probable nomenclature of the higher Maya time periods.

H. J. SPINDEN, The organization and progress of the work on the cenote collection.

C. E. GUTHE, The past season's work at Tayasal, Peten.

A. V. KIDDER,

Secretary.

degree a happy combination of the elements which make for success alike in the study and in the field. This combination also fitted him admirably for his duties as curator in two museums, Saint-Remo and the Museum d'Histoire Naturelle. Cartailhac loved his caves and no one knew them more thoroughly; but he also recognized the importance of an ample and well-ordered library, and of museum collections properly displayed. He could show a book, a specimen, a prehistoric station with a zest that captivated any beholder.

As a lecturer in his chosen field Cartailhac had few equals and never lacked opportunity to exercise his talent in this respect, even to the last. In addition to his Geneva engagement, he was to have lectured later in the winter at the Institut de Paléontologie Humaine, Paris. In the meantime he was giving his usual courses in anthropology at the University of Toulouse, which were always largely attended.

As an explorer of caverns and other prehistoric sites he had accomplished a prodigious amount of work. The more difficult the task, either mentally or physically, the more attraction it had for him. During the last few years of his life he penetrated the cavern of Trois-Frères through all its ramifications, on at least three occasions. Only those who have attempted the same feat even once can appreciate what this means; for Trois-Frères is one of the most difficult caverns imaginable.

As a member of the Commission des Monuments Classés (section of prehistoric monuments) under the Ministère de l'Instruction Publique et des Beaux-Arts, Cartailhac was instrumental in developing and directing the movement for the preservation of prehistoric monuments. He took the lead in setting aside as national monuments some of the important caves made known through his own researches and publications, such for example as Niaux in Ariège, Gargas in Hautes-Pyrénées, and Marsoulas in Haute-Garonne.

Cartailhac was not without honor both at home and abroad. He was a Correspondent of the Institut de France, President of the Société du Midi de la France, member and former president of various academies and learned societies of Toulouse, Doctor *honoris causa* of the University of Oxford, Officier de la Légion d'Honneur, Officier d'Instruction Publique and honorary member of various scientific societies, both French and foreign, including the American Anthropological Association.

As author, joint author, and editor, Cartailhac has left an enviable record. His principal works are listed in the following partial



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4. Numerous articles in L'Anthropologie and other periodicals.

## JOINT AUTHOR

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2. Cartailhac et M. Boule. La grotte de Reilhac, Lyon, 1889.
3. Cartailhac et H. Breuil. La caverne d'Altamira à Santillane près Santander (Espagne). Peintures et gravures murales des cavernes paléolithiques, Monaco, 1906.
4. L. de Villeneuve, M. Boule, R. Verneau, et Cartailhac. Les grottes de Grimaldi, 2 volumes (Vol. II), Monaco, 1906.

## EDITOR

1. Matériaux pour l'histoire primitive et naturelle de l'homme, Paris, 1869-1888 (18 volumes).
2. Dictionnaire archéologique de la Gaule, Epoque Celtique, L to S, Paris, 1919-1921.

## EXPEDITIONS OF THE FIELD MUSEUM OF NATURAL HISTORY IN 1922

THE Field Museum of Natural History of Chicago is resuming active field-work in many parts of the world this year.

Through the generosity of Mr. Arthur B. Jones, one of the trustees of the institution, an anthropological expedition was to be sent out to the Malay Peninsula and the Dutch East Indies in June. The Museum has already carried on extensive work in China, Tibet, the Philippines, and Melanesia; and it is anticipated that the results of this expedition will serve as connecting links between these fields, and will throw new light on the early history and peopling of the Pacific. The Malayan expedition is headed by Dr. Fay-Cooper Cole, who has already spent four years among the pagan tribes of the Philippines. He proposes to begin his work among the more primitive tribes of the Malay Peninsula, thence proceed to the advanced peoples of central Sumatra and Java, and finally to penetrate into the little known interior regions of Borneo.

Dr. J. A. Mason, on the staff of the Museum, will inaugurate ethnological and archaeological researches on the Isthmus of Panama



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## ANTHROPOLOGICAL NOTES.

Dr. Frank Baker, Professor of Anatomy in Georgetown University, and until recently Superintendent of the National Zoological Park, died at his home in Washington, September 30, 1918, in his seventy-eighth year. He was one of the most active members of the Anthropological Society of Washington in its early days, was its President in 1897, and Editor of the first series of the *American Anthropologist* from 1891 to 1898.

An extended account of Dr. Baker's activities will appear in the next number of the *American Anthropologist*.

Captain Robert G. Fuller died in Petersburg, Florida, on February 11. He received the doctor's degree in anthropology from Harvard University in 1916. He was assistant in anthropology at that university for three years. He took part in several expeditions of the Peabody Museum to the Southwest and was a member of Dr. Fewkes's party in the restoration of Spruce-Tree House.

A Swiss newspaper reports the death of Professor Georg Hermann Ruge, director of the Anatomical Institute in 1852, studied medicine at the universities of Jena and Berlin (1871-1876) and received his doctor's degree for a dissertation on the growth of the human lower jaw. From 1876-1888 he was assistant, privat dozent and extraordinarius in Heidelberg, then full professor of anatomy in Amsterdam until 1897, when he was called to Zürich as professor and director of the Anatomical Institute. He edited the *Morphologisches Jahrbuch* and within the last year of his life published a comprehensive work of definitely anthropological interest on *Die Körperformen des Menschen in ihrer gegenseitigen Abhängigkeit und ihrem Bedingtsein durch den aufrechten Gang*. His death occurred on January 21, 1919.

From volume XVI (1918) of the *Archiv für Anthropologie*, which has recently reached this country, we learn of the death of Professor Moritz Hoernes, the well-known Viennese archaeologist. Hoernes was born in Vienna on January 29, 1852, studied classical philology and archaeology at the universities of Vienna and Berlin, and after a long period of scientific activity at the Museum of Natural History of his native city he began to lecture at the university. Among his contributions to



knowledge may be mentioned his archaeological investigations in Bosnia and Herzegovina. Of his more general works *Der diluviale Mensch in Europa* (1903) and *Natur- und Urgeschichts des Menschen* (2 vols., 1909) are probably the best known in this country.

At the meeting of the Anthropological Section of the American Association for the Advancement of Science, held in Baltimore on December 27, 1918, a committee was appointed to take action in regard to the propositions contained in Professor Frassetto's paper.

The committee recommended that the paper be published in the *American Journal of Physical Anthropology*<sup>1</sup> and that suggestions made by Professor Frassetto be recommended to the consideration of the next anthropological congress which has to deal with questions of methods of anthropometry.

(Signed) FRANZ BOAS, *Chairman*,  
GEORGE G. MACCURDY,  
ROBERT BENNETT BEAN.

Mr. Neil M. Judd has been appointed Curator of Archaeology in the U. S. National Museum.

Professor Rudolf Martin has been for some time the successor of Johannes Ranke as professor of anthropology at the University of Munich.

Dr. Aleš Hrdlička, Curator of Physical Anthropology in the U. S. National Museum, has been made an Honorary Fellow of the Royal Anthropological Institute of Great Britain and Ireland.

Dr. Joseph Deniker, the distinguished French anthropologist, died on March 18, aged sixty-six years. Dr. Deniker, who was chief librarian of the Paris Natural History Museum, was born in Russia.

Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, has been designated as the representative of the Smithsonian Institution at the 20th International Congress of Americanists.

Dr. J. Walter Fewkes, Chief of the Bureau of American Ethnology, has gone to Texas to inaugurate archaeological work near Austin.

Prof. Alfred M. Tozzer, Secretary of the Association, returned in March to his duties in the Division of Anthropology at Harvard University. Prof. Tozzer, with the rank of Captain, had been engaged for many months testing candidates for aviation.

<sup>1</sup> This paper will appear in an early number of the *Anthropologist*.



ANTHROPOLOGICAL NOTES AND NEWS

THE PUTNAM BAFFIN ISLAND EXPEDITION sailed last summer under the auspices of the American Geographical Society, the Museum of the American Indian, Heye Foundation, the American Museum of Natural History and the Buffalo Society of Natural Sciences. The planned route of the expedition was westerly through Hudson Strait and thence north into the Fox Basin district. The expedition's anthropological activities were carried on in behalf of the Museum of the American Indian, Heye Foundation which was represented by Donald A. Cadzow.

Field Museum of Natural History is making available for public exhibits, fourteen large halls through a rearrangement of its heating system. Of these halls, eleven will be devoted to anthropological specimens. Among exhibits planned are those from Melanesia, the Philippine Islands, Malay Peninsula and Malay Archipelago, Polynesia, Micronesia, Madagascar and East Africa, North, West and South Africa, India, Egypt and Mesopotamia. The new halls will make it possible to devote the entire east wing of the main floor exclusively to North, Central and South American archaeology and ethnology. One of the new halls will be devoted to exhibits illustrating the progress of prehistoric man, for which Henry Field, assistant curator of physical anthropology, is now collecting in Europe. Another hall will be devoted to physical anthropology.

ERICH F. SCHMIDT, assistant in archaeology in the department of anthropology of the American Museum of Natural History, has joined the field party of the Oriental Research Institute of the University of Chicago, to assist in an archaeological reconnaissance of Asia Minor.

—*Science*

DR. GEORGE GRANT MACCURDY, of Yale University, director of the American School of Prehistoric Research, was designated to represent the Paris Society at the commemoration of the two hundredth anniversary of the founding of the American Philosophical Society, held in Philadelphia, April 27 to 30.



DR. MACCURDY has been appointed a member-at-large of the division of foreign relations of the National Research Council. Dr. and Mrs. MacCurdy will leave for Europe on May 19 to do reconnaissance work in prehistory prior to the opening of the summer term of the American School of Prehistoric Research on June 27.

—*Science*

MRS. ZELIA NUTTALL has recently been elected fellow of the Royal Anthropological Institute of Great Britain and Ireland and corresponding member of the Geographical Society of Philadelphia, to fill the vacancy created by the death of Sir John Keltie, the president of the Royal Geographical Society of England.

—*Science*

PROFESSOR WILLIAM THALBITZER, Danish naturalist and Arctic explorer, has been awarded the Loubat prize of the Swedish Academy of Science.

—*Science*

DR. WALDEMAR JOCHELSON, who has been the guest of the American Museum of Natural History during his visit to America, is now preparing to return to Russia, where he has accepted a position as division curator of the Museum of Anthropology and Ethnography of the Academy of Sciences, Leningrad, and as lecturer on ethnology at the Leningrad University.

—*Science*

DR. TRUMAN MICHELSON, ethnologist in the U. S. Bureau of American Ethnology, resumed his studies among the Fox Indians of Iowa during the summer.

—*Science*

According to the Italian correspondent of the *Journal* of the American Medical Association, the Emperor William institute for anthropology, hereditary transmission in man, and eugenics, which is being erected in Dahlem, near Berlin, by the Kaiser-Wilhelm-Gesellschaft, is rapidly nearing completion. Professor Eugen Fischer, anatomist, of Freiburg, will be the director of the institute. He will also be the head of the department of anthropology. The department of hereditary transmission in man will be in charge of Professor Muckermann, a former Jesuit father. The head of the department of eugenics has not yet been announced. It was hoped that the new institute can be dedicated in September, in connection with the

meeting of the International Congress on Heredity, which it to be held in Berlin.

—*Science*

NEIL M. JUDD, curator of American archaeology in the United States National Museum, has left Washington to complete his explorations at Pueblo Bonito, New Mexico, under the auspices of the National Geographic Society. This season's expedition is the seventh sent by the Society for the purpose of recovering and recording the story of this prehistoric Indian village.

—*Science*

PROFESSOR FAY-COOPER COLE, of the department of anthropology, University of Chicago, continued the extensive study of the Illinois mounds which he began last year. Illinois, according to Professor Cole, is the key state in anthropology for prehistoric America. His work last summer was part of a program that may take ten years to complete. Information was gathered on the mounds of the state by advanced students under his direction, and some preliminary excavations made.

—*Science*

PROFESSOR EDWIN SAPIR, of the department of anthropology, University of Chicago, and Fang-Kuei Li, Chinese student, studied the language of a group of Hupa Indians in northwestern California. Li, who is specializing in linguistics, is working under the committee on American Indian languages of the Council of American Learned Societies. He will teach Chinese at the university next year.

—*Science*

WARREN K. MOOREHEAD, director of the department of archaeology at Phillips Academy, recently received the honorary degree of doctor of science from Oglethorpe University, in recognition of work in American archaeology.

—*Science*

DR. FREDERICK STARR, associate professor emeritus of anthropology at the University of Chicago, who has returned from Japan, gave on August 2 a lecture at the university on life in that archipelago.

—*Science*

SIR HARRY JOHNSTON, the well-known explorer, naturalist and author, died in London on July 31, aged sixty-nine years.

—*Science*



DR. GUSTAV FRITSCH, professor of anatomy and physiology in the University of Berlin, has died at the age of eighty-nine years.

—Science

DR. WEGNER, professor of anthropology at the University of Frankfurt, has been chosen by the German minister of science, arts and education to conduct the 1928 expedition to Bolivia of the Frankfurt Society of Anthropology, Ethnology and Palaeontology.

—Science

DR. OTTO RECHE, since 1924 professor of anthropology and ethnography in Vienna, has accepted the corresponding position in Leipzig.

~~FELLOWS OF THE SOCIAL SCIENCE RESEARCH COUNCIL~~

The Fellowship Committee of the Social Science Research Council announces the appointment of the following eighteen scholars as research fellows of the Council for the year 1927-28, with two applications pending.

Of these the following are new appointments:

*Asher Achinstein* (Ph.D. Columbia)

Graduate student, Columbia University

Project: Time Sequences of Cyclical Phenomena in Business with Particular Reference to the Lag Between Production and Prices.

Place of study: New York.

*Crane Brinton* (Ph.D. Oxford)

Instructor, Harvard University

Project: The Economic and Social Status of the Rank and File of the Jacobin Clubs during the French Revolution.

Place of study: France.

*Emily Clark Brown* (Ph.D. Chicago)

Research Assistant, University of Chicago

Project: Industrial Relations in the Printing Trades in the United States and Great Britain.

Place of study: New York, Boston, Baltimore.

*Ruth L. Bunzel* (Ph.D. Columbia)

Graduate student

Project: Social and Individual Adjustments in a Primitive Community, with Special Reference to the Zuñi Indians.

Place of study: Zuñi, New Mexico.



## JOHN GREGORY BOURKE

Captain John Gregory Bourke, who died at the Polyclinic Hospital, Philadelphia, on June 8, was born at Philadelphia in 1843. When nineteen years of age he entered company E and afterward company D of the famous Fifteenth Pennsylvania Cavalry, in the Department of the Cumberland, as a private, serving from August 12, 1862, to July 6, 1865, when he was honorably mustered out, later being awarded a medal of honor for gallantry at the battle of Stone river, Tennessee, in December, 1862. On the recommendation of General George H. Thomas he was appointed a cadet in the United States Military Academy October 17, 1865, and was graduated June 15, 1869, becoming second lieutenant, Third U. S. Cavalry.

He joined his regiment September 29, 1869, and served with it at Fort Craig, New Mexico, to February 19, 1870; at Camp Grant, Arizona, to July 21, 1870, and in the field in Arizona, operating against hostile Indians, to August 15, 1871, being engaged in action near Pinal creek, July, 1870. Was aide-de-camp to General Crook, August 15, 1871, to March 3, 1883; also acting assistant adjutant general of troops in the field during operations against hostile Indians in 1872 and 1873, being in action at the summit of Sierra Ancha, December 15, 1872; Salt River canyon, December 28, 1872; Superstition mountains, January 16, 1873, and with Tonto Apaches, February and March, 1873. In orders No. 14, headquarters Department of Arizona, April 9, 1873, he was specially mentioned for distinguished gallantry in these and other affairs, which resulted, on February 27, 1890, in the tendering by the Secretary of War of the brevet rank of captain for gallant services, which he however declined. Bourke's friendship and loyalty toward Crook during their ten years' association on the frontier were unbounded, and the famous general had unlimited confidence in his gallant aid. In the language of General Stanton, Bourke's courage and gallantry were bywords in the army, and his service ought to have had a greater reward. His copious notes were in constant demand by Crook, who often referred to them as to time and place of events in his campaign.

While still a second lieutenant, Bourke was acting engineer officer, Department of Arizona, July 1, 1873, to March 22, 1875;



also acting assistant adjutant general of the same department, October 23, 1873, to June 9, 1874; was with the expedition to explore the Black Hills, Dakota, in June and July, 1875; was promoted to first lieutenant May 17, 1876; was acting assistant adjutant general of troops in the field on the Big Horn and Yellowstone and of the Powder river expeditions in Wyoming, May, 1876, to January, 1877, being engaged in the actions with Sioux Indians at Crazy Horse village, March 17; Tongue river, June 9; Rosebud, June 17; Slim Buttes, September 9, and Willow creek, Wyoming, November 25, 1876. For gallantry in the attack on the Indians on Powder river, March 17, 1876, and in the action on Rosebud creek, June 17 of the same year, Bourke was tendered the brevet rank of major on February 27, 1890, but this honor, like that previously earned, he declined. He participated in the campaign against Nez Percé Indians, September-November, 1877; was with Major Thornburgh's command in pursuit of hostile Cheyennes in the sand hills of Nebraska and Dakota, September and October, 1878; with the advance of General Merritt's command, marching to the rescue of Major Thornburgh's command on Milk river, Colorado, September, 1879, and on the Yellowstone expedition, August and September, 1880. He was promoted to captain on the 26th of June, 1882; acting assistant adjutant general of troops in the field operating against hostile Indians and on General Crook's expedition into the Sierra Madre, Mexico, in pursuit of hostile Apache Indians, April 6 to June 26, 1883; acting aide-de-camp to General Crook, March 24, 1884, to June 25, 1884; also acting assistant adjutant general, Department of Arizona, in the same year, and acting assistant inspector general of the same department, August 15, 1884, to June 25, 1885; with troop at Camp Rice, Texas, to September 18, 1885.

While Bourke became famous as an Indian fighter, his broad knowledge of the habits and customs and mode of thought of the red men fostered a sympathy for the American savage that prevented what many times might have proved the extermination of a predatory band. His intimate acquaintance with the inner life of the Indian was early recognized by the War Department. From December, 1880, to February, 1881, he was recorder of the Ponca Indian commission, and from April of the latter year until June, 1882, was assigned, under the orders of Lieutenant-General Sheridan, to the special duty of investigat-



Sincerely Yours -  
Philip B. Bourke



ing the manners and customs of the Pueblo, Apache, and Navaho Indians. His work on the *Snake Dance of the Moquis of Arizona* was the outcome of a part of this research, and formed the first scientific contribution to that celebrated ceremony. After taking a prominent part in the surrender of Geronimo, the Apache renegade, and his band in the Canyon de los Embudos, Sonora, Mexico, March 26, 1886, Captain Bourke was ordered to Washington for the purpose of elaborating his voluminous notes obtained during many years of contact with the Indians, which work was continued until April, 1891. Not content with a mere collation of his material regarding the tribes with which he was most familiar, Bourke spent many months during his sojourn at the capital in its extensive libraries for the purpose of recording similar and parallel customs of other primitive peoples throughout the world, and the results of this research were greater than one could ever hope to publish during a lifetime. A suggestion of the completeness of this work may be gained from his *Medicine-men of the Apache*, in the ninth annual report of the Bureau of Ethnology, a paper which has been highly commended and widely quoted.

Captain Bourke's interest in the ordure rites of primitive peoples was first aroused at Zuñi in 1881, during a ceremony of the Nêwekwe priests of that pueblo, and the results of his observations on that occasion were published in a pamphlet distributed among a limited number of students. A continuation of his researches along this line led to the publication of his noteworthy *Scatalogic Rites of all Nations*, Washington, 1891.

After rendering material aid to the Pan-American Congress, to which duty he was detailed by reason of his efficient knowledge of the Spanish language, Captain Bourke rejoined his regiment on April 9, 1891, and commanded his troop at Fort McIntosh, Texas, to May 14 of that year, and the troop and post at Fort Ringgold, Texas, being frequently in the field in the operations against Garza's band of marauders of the Rio Grande frontier, to March 3, 1893. This wary bandit was so closely pressed on one occasion by Bourke and his hardy troopers that his saddle and personal diary found their way to the National Museum, of which Bourke was a valued collaborator and a constant contributor. Among the many other collections in that institution bearing his name is the necklace of human fingers taken during the raid of the allied Sioux and Cheyenne in Wyoming and



Montana in the winter of 1876-'77, which resulted in the surrender of 4,500 hostiles at Red Cloud and Spotted Tail agencies in the early spring of the latter year.

During the World's Columbian Exposition Captain Bourke's knowledge of the Spanish language and of Spanish institutions was again called into requisition by his assignment to duty with the department of foreign affairs, in charge of the Convent of La Rabida. From November, 1893, to July 8, 1894, he commanded his troop at Fort Riley, Kansas, and was an active participant against the railroad rioters at Chicago in the autumn of 1894. He was ordered to Fort Ethan Allen, Vermont, his last post of active duty, in the autumn of that year, after having faithfully and bravely served his country in every quarter of its domain.

Captain Bourke was a frequent contributor to periodical scientific literature, particularly to the organs of the Anthropological Society of Washington, of which he was a councilor during his residence in Washington, and of the American Folklore Society, of which he was elected president in December last. The most frequently quoted of Captain Bourke's periodical contributions are: *Folklore concerning arrows*; *Vesper hours of the stone age*; *Primitive distillation among the Tarascoes*; *Distillation by early American Indians*; *The laws of Spain in their application to the American Indians*; *Notes on the cosmogony and theogony of the Mojave Indians*; *The gentile organization of the Apache Indians*; *The miracle play of the Rio Grande*; *The folk-foods of the Rio Grande Valley and of northern Mexico*, and *Popular medicine, customs, and superstitions of the Rio Grande*.

In addition to his connection with the societies above mentioned, Captain Bourke was a fellow of the American Association for the Advancement of Science, and a member of the Victoria Institute of Great Britain, and of the Congrès International des Américanistes. Captain Bourke's exceptional versatility, the product of a wide and varied experience, coupled with an extraordinary sense of humor and a wonderful power of expression, made him a most genial companion and gives even additional zest to his extra scientific productions, *An Apache Campaign*, *On the Border with Crook*, and *Mackenzie's last fight with the Cheyennes*.

In the death of John Gregory Bourke, Anthropology has lost an indefatigable investigator, American Literature a vivacious contributor, and the Army of the United States a courageous soldier.

F. W. HODGE.



July-Sept. 1927

GEORGE BYRON GORDON, director of The University Museum, University of Pennsylvania, for over sixteen years, died suddenly in January. Dr. Gordon was born on Prince Edward Island in 1870. He studied at the University of South Carolina and at Harvard University. After graduating from Harvard, he was chief of the Harvard expedition to Central America, for six years. In 1902 he was appointed assistant curator of anthropology at the University of Pennsylvania, curator in 1904, and assistant professor in 1907. Dr. Gordon was the author of a number of works on archaeology. At the time of his death he was in charge of two expeditions which are operating at Ur and at Beisan. —*The Museum News*

DR. WALDEMAR JOCHELSON gave a lecture on "The Prehistory and Present Ethnography of Siberia and Its Relation to Adjacent Countries" on May 9, 1927 before a meeting of The American Society for Cultural Relations with Russia in conjunction with The American Ethnological Society.

The American Scandinavian Review (March, 1927, 181) announces that Baron Erland Nordenskiöld has received the L. Angrand Foundation prize for his *Comparative Ethnographical Studies*.

DR. BRUNO OETTEKING of the Museum of the American Indian, Heye Foundation, spent last summer in Germany and Switzerland visiting various institutions in the interest of physical anthropology.

DR. A. I. HALLOWELL, University of Pennsylvania, made an investigation in January of the social structure and kinship of the St. Francis Abenaki.

THE LINGUISTIC SOCIETY OF AMERICA has been elected to membership in the American Council of Learned Societies. E. H. Sturtevant and Leonard Bloomfield have been appointed as representatives to the council. The first issue of *Language*, the journal of the Linguistic Society, appeared early in 1927.

PROFESSOR E. SAPIR is in California this summer for the purpose of investigating some of the aboriginal languages. Dr. Jaime de Angulo has begun the study of Karok and is planning to visit other tribes in northern California in the interest of linguistic research.

DR. LESLIE SPIER, who has been for several years connected with the University of Washington, Seattle, has accepted a professorship of anthropology in the University of Oklahoma, which is establishing an independent department in the fall.



RECENT FINDS in the Belgian Congo of tools, arrowheads and other weapons reported to be closely similar to artifacts of the European neolithic period, are now under the charge of the Belgian government and will be excavated by a competent archaeologist.

PROVISION for cooperation by the Smithsonian Institution with state, educational and scientific organizations in the United States for continuing ethnological researches among the American Indians, and the preservation of archaeological remains, would be made in a bill introduced in the House of Representatives by Mr. Byrns, of Tennessee. The bill would authorize an appropriation of \$20,000, to be expended for this purpose. —*Science*

DR. GEORGE GRANT MACCURDY, of Yale University, completed on February 4 a lecture tour of four weeks. He spoke twice at the University of Illinois, twice for the Davenport Public Museum, and once each for the Surgical Club of Omaha, the University of Iowa, the University of Michigan, the Toledo Art Museum, the University of Buffalo and the Academy of Sciences of Warren, Pa. Dr. MacCurdy's lectures were on prehistoric archaeology and dealt largely with the latest discoveries as well as with the work of the American School of Prehistoric Research, of which he is director. —*Science*

DR. R. R. MARETT gave the Frazer lecture in anthropology at the University of Cambridge.

KNUD RASMUSSEN, the Danish explorer, is preparing for a new Arctic expedition, the aim of which will be to throw light on the emigration of the first men into the Arctic region, investigating the origin of the Eskimos and their relation to other primitive people. *Science*

PROFESSOR G. ELLIOT SMITH, professor of anatomy in the University of London, delivered the Huxley lecture at Birmingham University on February 1 on "Science and Culture."

DR. GEORGE GRANT MACCURDY of Yale University, Director of the American School of Prehistoric Research, has been designated to represent the Paris Society of Anthropology at the Commemoration of the Two Hundredth Anniversary of the Founding of the American Philosophical Society, to be held in Philadelphia, April 27-30, 1927.



Am. Anthropologist, Vol. 8, No. 2, April 1895

### OBITUARIES

#### Robert Henry Lamborn

In the AMERICAN ANTHROPOLOGIST for April, 1893 (volume vi, page 223), the following announcement appeared: "A member of the Anthropological Society of Washington has placed in the hands of the Treasurer of the Society a sum of money, to be awarded in prizes for the clearest statements of the elements that go to make up the most useful citizen, regardless of occupation." Later numbers of the journal contained announcements of the selection of a distinguished Board of Commissioners of Award, and of the awarding of prizes to two out of the forty-two essays received under the terms of the competition from seventeen states of the Union and five foreign countries. The name of the founder of the prizes was not given in any of these notices. It is a melancholy pleasure to announce that the founder was the late Dr. Robert H. Lamborn, of New York.

Robert H. Lamborn was born in 1836, near Kennett Square, Chester county, Pennsylvania. After acquiring a liberal education in this country he matriculated at the University of Geissen, in Germany, where he made special studies in mining and metallurgy and obtained the degree of Ph. D.; afterward he took a course in the École des Mines, Paris. Returning to this country in the early sixties, he engaged in railway business in Pennsylvania, and subsequently became interested in the construction of railways in southwestern states, and was an active promoter and large owner of the Mexican Central Railway. Through these enterprises he amassed a fortune, and later, on retiring from active business about 1887, devoted himself to scientific and literary studies.

For many years he was secretary of the American Iron and Steel Association, and his earlier publications were chiefly technologic; among them are "A Rudimentary Treatise on the Metallurgy of Copper," London, 1860, and "A Rudimentary Treatise



on the Metallurgy of Silver and Lead," London, 1861. Numerous editions of the latter work have appeared. His later years were occupied in travel and in study of a wide range of subjects; he was an indefatigable collector and generous distributor of material pertaining to the fine arts, history, ethnology, biology, geology, and mineralogy, and his donations have enriched the Metropolitan Museum of Art and the American Museum of Natural History in New York, the Museum of Archeology in the University of Pennsylvania, and other institutions, including the United States National Museum in Washington. His private library, numbering several thousand volumes, and certain special collections were deposited in the University of Pennsylvania. Through personal encouragement of investigation and through the establishment of funds, he did much to promote research concerning scientific subjects. He was connected with numerous learned societies. His later studies were devoted largely to art; his last important publication was a work on "Mexican Painting and Painters," New York, 1891.

Dr. Lamborn's business associations in earlier years and extensive journeyings in later years brought him in contact with all classes of men, and he became a keen student of men and institutions; and his opportunities, coupled with a kindly disposition, served to render him a philanthropist whose energy and means were devoted in large yet provident measure to the welfare of mankind. The anonymous founding of the Citizenship prizes of the Anthropological Society was but a characteristic incident of his career. Many such incidents might be noted, though there is reason to opine that most of his philanthropic acts were so modestly performed as to leave no record save in the minds of the widely dispersed beneficiaries. Industrious, energetic, and sagacious, Dr. Lamborn was a successful business man; amiable, upright, and generous, he was a useful member of society; in all ways he was a noteworthy contributor to the material and intellectual progress of the world. By constant activity throughout his adult life he contributed more to than he absorbed from his country, and was thus in himself a model of citizenship, and in his death the progressive nineteenth-century world lost one of its makers.

Dr. Lamborn died unmarried January 14, 1895; a brother and sister survive him.

W J MCGEE.



## Death of Tom Keam

**Thomas Varker Keam** died at Truro, Cornwall, England, of angina pectoris, November 30, 1904. Mr Keam was born in 1846 in Truro, and went to sea as a boy, sailing as a midshipman in the English mercantile marine to Sidney and Newcastle, Australia. From there he went to San Francisco, thence in 1865 overland to Santa Fé, where he entered the service as a private in the First New Mexico Cavalry, in which he was later commissioned as second lieutenant. In 1872 he was Spanish interpreter in the government service at Fort Defiance, Arizona, and ten years later went to the cañon that bears his name, residing there as Indian trader until a few years ago, when he disposed of his interests and finally returned to his boyhood home at Truro. Mr Keam was widely known to Indians of the southwest as "Tomas" and was respected and loved by them. He spoke both Hopi and Navaho fluently.

Mr Keam was a man of the highest integrity, a keen observer, a wide reader, cultivated and accomplished. He maintained an open house at Keam's Cañon for every wayfarer, and his hospitality was shared alike by the scientific explorer and the wandering Indian. For many years he practically supported that remarkable genius, Alexander Macgregor Stephen, who lived more or less with him from the time of his arrival at the cañon in 1882 until his death in 1894. Mr Keam preserved Stephen's numerous valuable manuscripts with jealous care, and erected a monument on his grave in the cañon. Taking a lively interest in the Indian antiquities of the adjacent region, he made several important collections, the largest of which is now in the Berlin Museum of Ethnology. Other collections are in the Peabody Museum at Cambridge and the Museum of the University of Pennsylvania. Mr Keam's death will be deplored by every student and explorer of the Southwest, to most of whom he was known and beloved.

STEWART CULIN.

*Am. Anthropologist*, Vol. 7, No. 1, pp. 171-172, Jan-March 1905



## Death of Gustav Radde

GUSTAV RADDE, well known for his researches in Siberia and the Caucasus, died at Tiflis, March 16, aged 72 years. He was a biologist and geographer, but will be remembered as an anthropologist by his founding of the Natural Historical, Ethnographical, and Archeological Museum at Tiflis in 1866, and by his works on the Caucasus, particularly *Die Chewsuren und ihr Land*, published in 1878.

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Am. Anthropologist, Vol. 5, No. 3, Sept. 1903



**Howard B. Wilson.** — In the death of Howard B. Wilson (H. U., '03) at Willows, California, on August 4th, anthropology has lost a student and worker of great promise. Mr Wilson took deep interest in anthropological work during his college course, taking honors at graduation in that subject. He left Cambridge for California immediately after commencement, as a member of the Huntington Expedition of the American Museum of Natural History. It had been his intention to spend the summer in studying the Wintun and Yana tribes in northern California, but after little more than ten days in the field, he was stricken with typhoid fever, which terminated unexpectedly in heart failure after an illness of about two weeks. In the short time during which he had been at work, Mr Wilson had obtained much excellent material, and his death will be keenly felt by all who are interested in the development of anthropological work in California.

R. B. D.

**Am. Anthropologist, Vol. V, No. 4, 739, Dec. 1903.**



*Amer. Anthropologist*, Vol. 15, No. 3. July-Sept.

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their Geographical Distribution." A. C. Haddon, "The Outrigger Canoes of ~~Torres Straits and North Queensland.~~" J. H. Moulton, "Notes in Iranian Ethnography."

**Frederick Albion Ober** died at Hackensack, New Jersey, June 1, 1913, aged sixty-four years. Mr Ober had long been interested in anthropological subjects and had been a collector of note. He visited the West Indies as commissioner of the World's Columbian Exposition in 1891-92, making noteworthy collections throughout an area in which he had traveled extensively in the seventies, a part of the published results of which is his work *Camps in the Caribbees* (1879). Mr Ober also wrote many volumes of travel and adventure, and several books for boys, designed chiefly to impart information on ethnological and historical subjects, as *The Last of the Arawaks* (1901), *A Boy among the Pueblos* (1902), *With the War Chiefs* (1904), *With Osceola the Seminole* (1905), *A Friend of King Philip* (1906), and *In King Philip's War* (1907). Mr Ober was a member of the American Antiquarian Society, under whose auspices was published in 1894 his *Aborigines of the West Indies* (46 pp.).



*Am. Anthropologist, Vol. 5 (ns), No. 1, March 1903*

HEBER REGINALD BISHOP AND HIS JADE  
COLLECTION<sup>1</sup>

By GEORGE FREDERICK KUNZ

Among American men of wealth who have been eminent first as collectors and amateurs in various branches of art and science, and then as patrons and public benefactors in the same departments, few names will go down to posterity with greater honor than that of the late Heber R. Bishop, of New York, who died December 10, 1902, leaving memorials in both the great public museums of the metropolis.

Heber Reginald Bishop came of New England stock, his family having emigrated from Ipswich, England, to the Massachusetts colony in 1685, settling in Medford, Massachusetts. Here the subject of this notice was born in 1840. He received a mercantile training in Boston, and at the age of nineteen went to Remedios, Cuba, to engage in the sugar business, which at that time was very flourishing. Two years later, in 1861, he founded the sugar refining and exporting house of Bishop & Company, and for the next decade or more he lived principally at Remedios, although frequently visiting the United States. The business was extensive and prosperous until the disorders, arising from the Cuban revolution, began in 1873, when Mr Bishop saw that the disturbed condition of the island would ultimately ruin his financial prospects. He therefore disposed of his business at a figure far below its value, and returned to the United States with a considerable fortune.

Soon after establishing himself in business he married Miss Mary Cunningham, whose father, James Cunningham, resided at Irvington on the Hudson, and there Mr Bishop established a summer home. He soon became actively interested in various large enterprises connected with gas, iron, and railway interests, and was promi-

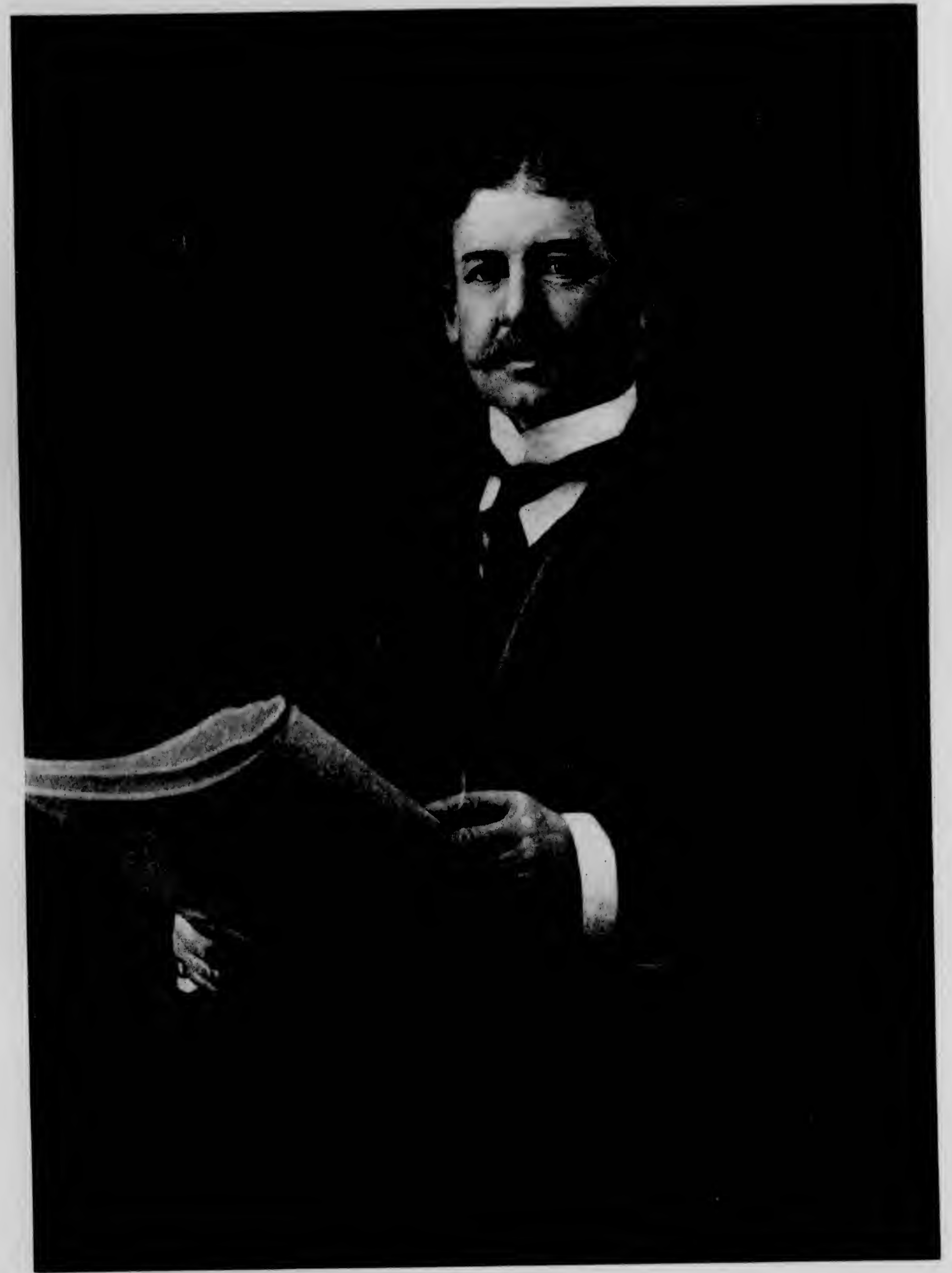
<sup>1</sup> Read in abstract before Section H, American Association for the Advancement of Science, Washington, January 3, 1903.



nent in the building of the Third Avenue Elevated Railroad in New York City. Ere long he turned his attention to industrial developments in the west, particularly to several leading railroads of the northwestern states. He was a pioneer in capitalizing and developing the great iron resources of the vicinity of Duluth, Minnesota, and became largely interested in various iron companies in both the west and the east. He was also associated with several important corporations of New York City, such as the Metropolitan Trust Company, and his eminent business abilities were widely recognized.

But Mr Bishop's activities were not confined to mercantile and financial affairs. He was a man of broad public spirit and benevolent aim, and the museums, hospitals, and churches of New York soon became objects of his intelligent and practical interest. His most noted gifts were to the Metropolitan Museum of Art, but he gave also to the American Museum of Natural History, in 1879, a large collection of Alaskan antiquities, and from 1880 to 1883, specimens illustrating the ethnology of British Columbia collected with the coöperation of the late Major J. W. Powell. Among the principal specimens in the latter collection is the great Haida canoe, which measures 64 feet in length and 8 feet in width, being hollowed from a section of a single tree by the Bella Bella tribe of Indians, opposite Queen Charlotte islands.

Mr Bishop possessed and displayed a remarkable appreciation of art in its many forms. On his frequent visits to Europe he found opportunity for acquiring a knowledge of the highest art productions, and he purchased liberally for the adornment of his home with objects of taste and elegance. In this country, too, he manifested the same enthusiasm; he was a constant attendant at art sales and exhibitions, and for over thirty years was known as an extensive collector. As Dr S. W. Bushell, the eminent foreign connoisseur, well said, he was known from St Petersburg to Peking. Mr Bishop's collection of Japanese lacquers, bronzes, and swords was especially noted. At a time when such materials were more readily obtainable than at present, he turned his attention to Oriental textiles and robes, gathering, among other objects of Asiatic art, extensive and remarkable collections of the gorgeous fabrics worn by Chinese nobles and Japanese daimios.



 *Herbert R. Bishop*



But Mr Bishop's last and most notable specialty was his collection of jades. This began with his purchase of the Hurd vase — one of the finest objects in jade that ever left China — from Tiffany & Company, in 1878. He thus became interested in this peculiar material, with its variety of tints and the endless forms into which it was wrought by Asiatic peoples ; and the result of this interest is the finest collection of jade that exists anywhere in the world. It has been gathered from many lands, and from the sales of many other collections, and contains over a thousand specimens, ancient and modern, in the natural state, or carved, engraved, and jeweled.

Mr Bishop was ever on the alert for choice specimens with which to enrich his jade collection ; he would follow the wanderings of a single piece for years, until the opportunity came for its purchase. In this way he obtained the best examples from many important collections, including the celebrated Welles collection exhibited some years ago at the South Kensington Museum. Among the noted pieces now in the Bishop collection are the emerald-green vase from the Brayton Ives collection, and the cylindrical green vase from the Hurd collection, above mentioned. This vase was obtained in China by Mr Hurd, who was a Boston tea merchant, it having formed part of the loot obtained by the armies of the Anglo-French expedition in 1860, when the forty buildings that comprised the Yuan-Ming-Yuan, or world-famed Summer Palace of Peking, were sacked and the imperial contents — the triumphs of the lapidarian art of centuries — were dispersed to the collections of the world through official, military, and commercial media. No finer example of jade ware existed among all this loot. It is elaborately carved in lantern shape, with foliage and garden scenes, and when a candle is placed within it, the design, with its varying shades of green, is emphasized with exceeding beauty. The collection is also rich in examples of the rare and beautiful "lettuce green" jades, which are highly prized and costly. All the many varieties of tint, and all the types and styles of workmanship in this mineral, which has been almost venerated by the Chinese and other Asiatic nations for centuries, are represented. The collection contains also a series of wonderful jewel-jades from East India, inlaid with large and valuable rubies, emeralds, and diamonds, as well as the famous Kligowski jewel-jades.



Nor is it only the artistic and historical fields that this unique collection illustrates, for the scientific side, both in archeology and mineralogy, is likewise fully represented. The former class comprises typical examples from Mexico, Central America, the north-west coast of America, the Swiss lake-dwellings, France, Italy, New Zealand, and elsewhere; the latter includes specimens with original labels of Damour, and what is perhaps the only known crystal of jadeite, besides a single mass of nephrite weighing 4,715 pounds, found by the present writer in Situ, at Jordansmühl, Silesia, in 1899, and forming the largest piece of nephrite ever found on the European continent — indeed it is greater in weight than all the nephrite objects ever found in Europe.

The collection thus formed grew in the course of time until it came to be recognized as the most complete assemblage of jade objects in the world, exceeding even the fine collection in the British Museum. Mr Bishop finally began to feel that the collection was too important and valuable to remain in private hands, but that it should be accessible to the public in a fireproof building. He therefore commenced preparations for presenting it to the Metropolitan Museum of Art, of which he had for years been a trustee and patron. As an important part of this princely gift to the public and to science, he undertook the preparation of an exhaustive catalogue of the collection, illustrating its artistic, archeological, and geological aspects, which he desired to publish, without regard to expense, in a sumptuous volume limited to one hundred copies. The preparation of the scientific articles and the scientific investigation for the catalogue were assigned entirely to the writer, who was so fortunate as to enlist the coöperation of a dozen men eminent in related fields of research on both sides of the Atlantic; consequently a more thorough investigation of jade has been made in this work than perhaps was ever undertaken in connection with any other mineral. The specific gravity, the tensile strength, the compression test, the sonorousness of the mineral from a musical point of view, a chemical investigation, a macroscopical study, a microscopical examination of thin sections, the origin of the mineral, the mining, the archeological history, the cutting, drilling, polishing, and many other phases, have been studied with the utmost thoroughness, and where a specialist would be

found who more fully understood any special branch of the subject, his services were obtained to perform that part of the work.

Color experts were engaged for the drawings, engravings, and historical data; Chinese and Japanese artists were employed in illustrating it, and Mr Bishop himself supervised their work, which is of the highest quality. Many of the reproductions in color are by Prang, whose work on kindred subjects is so well known.

This unique catalogue was completed a short time ago, and is now about to pass through the press. Illustrations are given of all the more important objects of jade, including those finest in color or in etching. The catalogue presents the dates and gives details of style with historical particulars; it thus furnishes an important contribution to our knowledge of Oriental art, and will rank among the most authoritative and costly catalogues of the kind known, each copy representing an expenditure of about one thousand dollars. The work will be distributed only by presentation to important institutions having facilities for utilizing it, and to the crowned heads and other great rulers of the world. Not a single copy will be given to any private person not a member of Mr Bishop's family, nor will any copy be sold.

A circumstance which illustrates Mr Bishop's rare judgment and skill in selection, is the fact that in the minute scientific investigation to which the specimens were subjected, less than one percent were discarded as not being true jades; and these, strange to say, were pieces that had a reputation for purity or rarity of color, or some other property which the Chinese peculiarly value in jades, and in which they had themselves been misled.

In May, 1902, when Mr Bishop formally announced his gift of the collection to the Metropolitan Museum, he expressed the wish that the magnificent cases now containing the jades should form a part of the collection, and that the room in which they were to be exhibited should be a reproduction of his own ballroom where he had kept the collection. This magnificent apartment has been pronounced by some of the greatest foreign architects to be the finest Louis XV. room that may be seen anywhere, excepting possibly those at Versailles and Potsdam. These wishes were acceded to, and Mr Bishop went to Paris to supervise the reproduction of this



ballroom, making a gift of \$55,000 to the Museum to cover the cost of finishing the room and of installing the collection in accordance with his desire. The Louis XV. cases referred to are constructed of the finest quality of gilt bronze and plate glass, and are a production of the house of Allard & Company of Paris. The spacious room in a northeastern corner of the Museum which has been prepared for the collection is to be known as Bishop Hall. A year will probably elapse before the collection can be made ready for the public view. In order to insure the consummation of his plans regarding the collection and the publication of the great catalogue, Mr Bishop has bequeathed \$50,000, in addition to his other gifts.

Although he had presented no special collection to the Metropolitan Museum except that of the jades, Mr Bishop contributed largely in other ways to the support of that institution. He did more than any one else toward the success of the project to save in its entirety and to present to the Museum the collection of swords made by Mr Brayton Ives, and which were offered for sale after the latter's death. Through the coöperation of Mr Bishop, the late W. T. Walters, the American Art Association, and a few others, this collection, valued at \$15,000, was contributed to the Museum.

Of special importance was Mr Bishop's collection of Japanese iron-work, many of the examples being quite old. Among the specimens in this collection is a dragon nine feet in length, as flexible as a living reptile; and by way of contrast, a skeleton of a man, no larger than the little finger, yet containing a representation of every bone in the body and every joint, uncannily mobile. The lobsters, fish, and other objects of the same material make a collection that stands unrivaled in the United States. There is also a great display of *cloisonné* enamels; a large collection of carved ivories, many of them old and wrought with that artistic intricacy of detail attained only by the Orientals; an extensive series of lacquers and carved woods, of porcelains and Chinese coins; and lastly, a collection of hard stones other than jade. If this collection could be procured in its entirety for the Metropolitan Museum of Art, either by purchase or by donation, this would become one of the greatest museums for Orientalia in the country. With these,

and the Morgan-Garland porcelains and the Bishop jades in New York; the Morse Japanese pottery and the S. W. Bigelow collection of Chinese and Japanese art objects in Boston; the great Henry Walters collection of Oriental art in Baltimore; the Detroit collection, and the fine display in the National Museum at Washington, the art of Japan and China can be studied better in America than anywhere else in the world.

It is rarely the case that one whose financial and social duties are so numerous as were those of Mr Bishop devotes so much time and achieves such notable success in connection with a single object of the kind herein mentioned. To Mr Bishop science and art owe the formation of a great collection; the preparation of a scientific, artistic, and literary description of it; the publication of a volume of such richness of illustration as to stand unparalleled; and, finally, the presentation of the collection and its installation in a specially prepared hall in a leading museum.



## ANTHROPOLOGY AT THE WASHINGTON MEETING

By GEORGE GRANT MAC CURDY

The affiliation of the newly founded American Anthropological Association and the American Folk-lore Society with Section H of the American Association for the Advancement of Science has resulted in the unification of all anthropological interests strictly national in scope. The union of these forces was reflected in the joint program for the closing day of the recent Washington meeting, after one day had been devoted to each of the three separate societies.

Three of the special committees of the American Association for the Advancement of Science are chosen from among the anthropologists. The Committee on the Teaching of Anthropology in America submitted a report to the Council which will be printed later. There is no record of any report from the Committee on the Protection and Preservation of Objects of Archeological Interest. The Council adopted the report of the Committee on Anthropometric Measurements, which is as follows :

This committee begs to report that anthropometric researches have been continued at Columbia University under the direction of its New York members and with the coöperation of Professor Farrand, Professor Thorndike, Dr Wissler, Mr Bair, Mr Davis, and Mr Miner. Tests have been made on the freshmen entering college, calculations have been carried out on measurements of school children, and new determinations of the mental traits of school children have been made and correlated. The chairman of the committee has carried forward an extensive anthropometric study of American men of science, the preliminary results of which formed the subject of his address as president of the American Society of Naturalists. An anthropometric laboratory has been arranged at the present meeting of the association, with the \$50 appropriated at the Pittsburg meeting for the purpose, and tests of the physical and mental traits of members are being made. We ask that this committee be continued and



### GEORGE MERCER DAWSON

GEORGE M. DAWSON, C.M.G., LL.D., F.R.S., Director of the Geological Survey of Canada and an editor of the *American Anthropologist*, died on March 2, in his fifty-second year, of acute bronchitis, after an illness of but a few hours. In his death Canada loses her leading scientist, and North America one of her foremost geologists.

George Mercer Dawson was born at Pictou, Nova Scotia, August 1, 1849. His father, Sir J. William Dawson (who died in 1899), long known as principal of McGill University and still more widely known as the author of standard works on geology, archeology, and related topics, was Canada's most eminent scientist for decades; his mother, Lady Dawson (Margaret A. Y. Mercer), representative of a distinguished Edinburgh family, still occupies a prominent place in that scientific and educational circle in Montreal which grew up under the influence of her honored husband. Born with the best physical and intellectual endowments, young Dawson suffered a nearly fatal accident (involving a fracture of the spine) in infancy, which arrested bodily growth and resulted in permanent deformity; yet the misfortune was so far counteracted by early treatment and training, and so far overcome later by inherent vigor, that its victim achieved distinction in his maturity as one of Canada's hardest explorers, while his intellectual accomplishments could hardly have been enhanced by any physical advantages.

Dawson's earlier education was acquired partly in Montreal, partly in Edinburgh; later he took a partial course in McGill University, followed by a course in the Royal School of Mines (London), 1869-1872, where he not only graduated with honors but took



the Duke of Cornwall scholarship and the Edward Forbes prize, and received the highly-prized title of Associate. Returning to Canada, he began original researches in geology. In 1873 he was appointed geologist and botanist of the British North American Boundary Commission, and his report is one of the classics of Canadian geology. In 1875 he was appointed on the staff of the Canadian Geological Survey, and entered on a remarkable career of exploration of northwestern North America; his work including extended reconnaissances of the Liard and Yukon valleys, of the Canadian Rocky mountains, and of British Columbia. During these travels and researches he came in frequent contact with aboriginal tribes, and did excellent work in recording their characteristics and customs and in collecting their languages. In 1883 he was made Assistant Director of the Geological Survey Department; in 1891 he became a fellow of the Royal Society of England, and during the same year received the Bigsby medal for eminent researches in geology. In 1891 and 1892 he served as one of the British Bering Sea Commissioners, for which service he was decorated by the late Queen and Empress Victoria with the order of Companion of Saint Michael and Saint George; and about the same time degrees were conferred on him by McGill University and Queen's College. In 1893 he was elected president of the Royal Society of Canada; on the retirement of Sir Alfred Selwyn in 1895, he was appointed Director of the Geological Survey; and when an Ethnological Survey of Canada (modeled after the Ethnographical Survey of the United Kingdom and thus after the Bureau of American Ethnology) was instituted in 1896, he was placed at the head of the Survey Committee.

It falls to few men to have so many high honors and grave responsibilities thrust on them in so short a period; the succession is probably without parallel in Canada's history; yet it is the common judgment that the honors were fully merited, the responsibilities borne in such manner as to add renown to the country and the crown. Dr Dawson's career was a credit to Canada, and



GEORGE MERCER DAWSON



an eloquent testimony to the wisdom of the nation in recognizing and utilizing the talents of her sons.

One of Dr Dawson's earliest contributions to ethnology was a memoir on the Haida Indians of Queen Charlotte islands, published in the form of an appendix to the Report of the Geological Survey of Canada for 1878-79 (pp. 103-189, pls. III-XIV); a contribution made noteworthy by the novelty and extent of the observations and the comprehensiveness of the record. Four years later he, in association with W. Fraser Tolmie, prepared a valuable series of "Comparative Vocabularies of the Indian Tribes of British Columbia, with a Map Illustrating Distribution," which were published by the Geological Survey in 1884; and he appended a valuable series of notes on the aborigines of the Yukon district and adjacent territory to the Survey Report of 1887-88 (pp. 191-213). About the same time he prepared for the Royal Society of Canada a memoir on the Kwakiutl people of Vancouver island and adjacent coasts, with an extended vocabulary (Trans. Roy. Soc. Can., vol. V, sec. II, 1887, pp. 1-36, with plate); and still more comprehensive was his subsequent memoir entitled "Notes on the Shuswap People of British Columbia" (ibid., vol. IX, sec. II, 1891, pp. 3-44, pl. vi). A "Note on the Occurrence of Jade in British Columbia, and its Employment by the Natives" was published in 1887 in the *Canadian Record of Science*; and a summary sketch of the "Past and Present Condition of the Indians of Canada" appeared in the *Canadian Naturalist*, vol. IX, 1881. In 1884 the British Association for the Advancement of Science appointed a committee to investigate the physical characters, languages, and industrial and social condition of the northwestern tribes of Canada, of which committee Dr Dawson was made a member; and by reason of previous familiarity with the subject, acquaintance with territory and tribes, and presence on the ground, it naturally fell mainly to him to organize and administer the work of the committee. The work was carried forward with great economy under small grants, and the reports of the collaborators (among whom



Dr Boas deserves especial mention) were published annually up to the institution of the more formal survey in 1896.

While several of Dr Dawson's titles and the prefatory remarks in some of his papers imply that his ethnologic researches were subsidiary to his geologic work, and while his busy life never afforded opportunity for monographic treatment of Canada's aborigines, it is nevertheless true that he made original observations and records of standard value, that much of his work is still unique, and that his contributions, both personal and indirect, materially enlarged knowledge of our native tribes. It is well within bounds to say that, in addition to his other gifts to knowledge, George M. Dawson was one of Canada's foremost contributors to ethnology, and one of that handful of original observers whose work affords the foundation for scientific knowledge of the North American natives.

Primarily a geologist, Dawson did his work in such wise as to aid in the solution of fundamental problems in archeology, and so to illumine various aspects of anthropology. When he returned from the Royal School of Mines to the land of his nativity, he found the geologists of Canada and the United States at issue concerning the later periods and episodes of geologic history. The differences were natural; they grew out of the fact that each group of earth-students began with the phenomena of their respective fields—those of Canada with late-glacial, aqueo-glacial, and glacial deposits only, those of the United States with earlier glacial deposits chiefly—and extended inference too far into the neighboring field; yet the differences were none the less unfortunate and obstructive of progress. Young Dawson wisely avoided controversy, but gradually extended observation over the more northerly field, gradually systemized knowledge of the Pleistocene history of the northland, gradually brought the stern logic of facts to bear on the general interpretations, and in this manner contributed more than any associate—probably more than any contemporary—toward harmonizing the discrepant readings of the

records of rocks and ice. Today the leading geologists of Canada and northern United States are practically at one as to the later episodes of earth-making; they are in substantial agreement as to the geologic time-scale by which the antiquity of man on the western hemisphere is to be measured; and for this happy condition they are indebted to no one more than the sagacious and far-sighted student whose untimely end they are united in mourning.

Time was when progress was mainly material, and when he who made two blades of grass to grow where one grew before was a great human benefactor; now horizons have widened, and progress has changed its course so far that he who sows ideas and harvests knowledge is coming to be reckoned among the greatest of benefactors. Of such was Dawson's work; gaining broader knowledge of his country than any predecessor, he gathered the wide-spreading strands in single grasp; writing treatises on geologic history among the most masterly ever penned, he was able to look from the past through the present and into the future far more clearly than most of his fellows; so his surveys of natural resources and possible utilizations contributed in unexcelled degree to the welfare of his nation and others, while the light of his knowledge and the radiance of his example have raised in due measure the intellectual plane of the western world.

Dawson was one of the men who left the world better because he lived in it.

W J M.



HARLAN I. SMITH spent the field season of 1928 in British Columbia, where incidental to collecting ethnological specimens and making motion picture records in the Shuswap, Okanagan, Coast Salish, and Tsimpshian Indian areas he carried on archaeological reconnaissance, making photographs of pictographs and petroglyphs, as well as of specimens in local Museums and collections. Petroglyphs were found overlooking the sea on two points immediately west of Aldridge point some twenty miles west of Victoria. It is rather remarkable that these should have escaped the attention of archaeologists who have worked in this region for many years. The pictographs on the rock bluff on the west side of Mara lake about six miles south of Sicamous in the Shuswap Indian area were visited; also those of two localities in the Okanagan Indian area, one on the west side of Okanagan lake near Kelowna, and another on the right side of the Penticton-Keremeos road. In the Coast Salish Indian area pictographs were visited about two miles south of Britannia Beach, Howe sound near Vancouver.

Am. Anthropologist, Vol. 31, No. 4  
pp. 829-830, Dec. 1929.



*Am. Anthropologist, Vol. 6, No. 3, July 1893*

**SOME MYTHIC STORIES OF THE YUCHI INDIANS.**

BY ALBERT S. GATSCHET.

The myth explaining the origin of dry land is so widely disseminated in North America that there was probably no tribe east of the Interior Basin without a knowledge of it. This wide circulation caused it to be recounted in many different ways. I have obtained one of these relations, as modified by Yuchi story-tellers, from a pupil of the mission school at Wialaka, Creek nation, on the Arkansas river near the present settlements of the Yuchi. Here the Creator is introduced as agent, although he is scarcely in any way helpful in the creation of the land. The other land-creation story below differs in some particulars from the first one and omits the mention of a creator or great spirit, whose existence is illogical in this connection. George W. Grayson, of Eufaula, Indian Territory, obtained it from Noah Gregory some years ago.

**THE ORIGIN OF THE DRY LAND.**

When the Creator resolved to make a home for the living beings he had no solid matter to start with, and hence called a council of various animals to deliberate upon the matter. Among those that he gathered were the wolf, the raccoon, the bear, the turkey-buzzard, the crawfish, the loon, and the ring-necked duck. They decided that earth should be taken from the bottom of the waters, and selected the loon for the purpose, as he was known to be the best diver. The loon put white beads around his neck and plunged into the water, but the water was deep and its pressure forced the beads into the skin of his neck, so that they could not be removed, and they are sticking there even now. As he returned to the surface without obtaining any earth or mud, the beaver was ordered to accomplish the task. He dived, but the water suffocated him and his dead body reappeared on the surface largely swelled up. This is the reason why all beavers now show a thick, swollen exterior. Another beast had to plunge down on the same errand. The crawfish took a dive and soon yellow dirt appeared on the water's surface. He came near being drowned, but on reappearing he stretched up his claws,



which were examined by the animals assembled. They found some mud sticking on the inside of them, between the extremities, and handed it over to the Creator, who rolled it out to a flat mass, spread it on the surface of the waters, and it became land. The fish, whose domain was the bottom of the water, noticed the coming down of the craw-fish and pursued him for the theft, but the craw-fish managed to elude him and escaped to the surface.

#### HOW THE LAND WAS FIRST MADE.

The earth was all water. Men, animals, and all insects and created beings met and agreed to adopt some plan to enable them to inhabit the earth. They understood that beneath the water there was earth, and the problem to be solved was how to get the earth to the top and spread it that it might become habitable.

They chose first one and then another animal, but none of them could hold its breath long enough to accomplish the work. Finally they selected the crawfish, who went down and after a long time brought up in his claws a ball of earth. This was kneaded, manipulated, and spread over the waters (the great deep). Thus the land was formed. At first it was in a semi-fluid state and not well habitable. Now the turkey-buzzard was sent out to inspect the work. He was directed not to flap his wings while soaring over the lands and inspecting them. The turkey-buzzard on his tour of inspection obeyed orders perfectly well, but when he had almost completed the inspection, he became so exhausted as to be forced to flap his wings in order to support himself. The effect of this upon the almost fluid earth is to be seen to this day in the hills, mountains, and valleys of the earth.

#### YUCHI SUN MYTHS.

The Yuchis believe themselves to be the offspring of the sun, which they consider to be a female. According to one myth, a couple of human beings were born from her monthly efflux, and from these the Yuchis afterward originated. Another mythic story pretends that the head of the sorcerer who tried to kill the sun at the time of sunrise was suspended to the cedar tree; the blood trickled from it to the ground and gave origin to the Yuchi people, while other particles of the blood fell upon the cedar itself and caused it to become red-grained. The history of the three or four hunters crossing the chasm from which the sky is rising, at the

peril of their lives, appears to be only variant of the wizard losing his head. It is found among the Cherokees, Shawnees, and other tribes of the Indian Territory.\* The myth below, in its modified Yuchi form, was obtained by me in the Yuchi language from a young man of that tribe at Wialaka, in 1885. The purpose of the myth is twofold: it attempts to explain the quicker motion of the sun in its morning path and the origin of the reddish or brown color of the cedar-wood texture.

In the popular belief the *Hiki* or mysterious being is depicted sometimes as an ogre or other dangerous monster; at other times as an animal with human, or rather, superhuman, faculties. The present story makes of the *Hiki* an instructor of the people in the useful arts of life. Every Indian nation has a culture-hero of this description, comparable to Quetzalcoatl, Bochika, Flint Boy, Apollo, and others, and these culture-heroes are usually personifications of the sun. No doubt the monster *Hiki* is the sun personified in a manner to suit the belief of the Yuchi people. The presence of a wizard at sunrise was evidently suggested by the appearance of sun-dogs in hazy weather.

#### WHY THE CEDAR TREE IS RED-GRAINED.

An unknown, mysterious being once came down upon the earth and met people there, who were the ancestors of the Yuchi Indians. To them this being (*Hi'ki* or *Ka'la hi'ki*) taught many of the arts of life, and in matters of religion admonished them to call the sun their *mother* as a matter of worship. Every morning the sun, after rising above the horizon, makes short stops, and then goes faster until it reaches the noon point. So the Unknown inquired of them what was the matter with the sun. They denied having any knowledge about it, and said, "Somebody has to go there to see and examine." "Who would go there, and what could he do after he gets there?" The people said, "We are afraid to go up there." But the Unknown selected two men to make the ascent, gave to each a club, and instructed them that as soon as the wizard who was playing these tricks on the sun was leaving his cavern in the earth and appeared on the surface they should kill him on the spot. "It is a wizard who causes the sun to go so fast in the morning, for at sunrise he makes dashes at it, and the sun, being afraid of him, tries

\*See AMERICAN ANTHROPOLOGIST, 1893, p. 64.



to flee from his presence." The two brave men went to the rising place of the sun to watch the orifice from which the sun emerges. The wizard appeared at the mouth of the cave, and at the same time the sun was to rise from another orifice beyond it. The wizard watched for the fiery disk, and put himself in position to rush and jump at it at the moment of its appearance. When the wizard held up his head the two men knocked it off from his body with their clubs, took it to their tribe, and proclaimed that they had killed the sorcerer who had for so long a time urged the sun to a quicker motion. But the wizard's head was not dead yet. It was stirring and moving about, and to stop this the man of mysterious origin advised the people to tie the head on the uppermost limbs of a tree. They did so, and on the next morning the head fell to the ground, for it was not dead yet. He then ordered them to tie the head to another tree. It still lived and fell to the ground the next day. To insure success, the Unknown then made them tie it to a red cedar tree. There it remained, and its life became extinct. The blood of the head ran through the cedar. Henceforth the grain of the wood assumed a reddish color, and the cedar tree became a medicine tree.

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TATTOOING IN TUNIS.—It was not long since announced in the *Revue Scientifique* that at one of the meetings of the Academy of Sciences M. Vercoutre, who has resided in Tunis, read a paper upon the tattooing of the face and limbs practiced by the native Tunisians. The fact has been established that the most perfect of these tattooings represents a doll-like human figure with the arms extended. M. Vercoutre has recognized that this figure, which has until the present time remained inexplicable, is nothing more than a rigorously exact reproduction, preserved by tradition without sensible modification, of the manikin which figures with arms extended upon the monuments of Phœnice and Carthage, and which the archeologists have called the "symbol of the Punic Trinity." The figure is also met with upon the Phœnician columns and upon the neopunic lamps of Carthage.

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G. R. STETSON.

*L'Afrique de Genève* states that "Sir Sidney Shepherd, governor of Bechuanaland, attributes the total absence [*sic*] of crime in his jurisdiction to the prohibition of the sale of alcoholic drinks for the last seven years."



Brown, H. - A Pima-Maricopa Ceremony - 1906

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A CACHE OF STONE BOWLS

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twenty-five stone mortars, within the radius of a mile, all of which had been broken by violence, evidently by an enemy for the purpose of depriving the villagers of an important means of preparing food. Beside these mortars I found a slab of green talc, about 8 by 15 inches, and three slabs of sandstone of about the same width and length and  $1\frac{1}{4}$  inch in thickness. Fragments of similar sandstone slabs have been found near the same site, but no pestles or other artifacts that had not been broken, a circumstance that would seem to indicate that everything had been either stolen or deliberately destroyed.

SOUTH PASADENA,  
CALIFORNIA.



## A PIMA-MARICOPA CEREMONY

By HERBERT BROWN

The Harvest or Corn festival of the Pima and the Maricopa Indians, known to them as *Pan-neeck*, or Wild Pastime, is no longer observed by them, nor do I know that it has been observed for the last twenty-five or thirty years. Although known as a harvest festival it was indulged in on all important occasions to the extent of one or more times a year. Any event of note in tribal life was generally so celebrated—an abundant harvest; a successful raid against the Apache; the killing of any of the many predatory bands of renegade Indians which at that time infested almost all sections of the country. Whatever the occasion, the festival was the signal for a great gathering. I was told that at one time there were no fewer than 4,000 Indians present—Pima, Maricopa, and Papago. I can not now recall the reason for the celebration and my notes fail to aid me in the matter.

These celebrations invariably took place in the mesquite forest north of the old Casa Grande ruins, south of the village of Blackwater on the Gila. A circle of ground, some half an acre in extent, was cleared of underbrush and logs. A ridge of loose earth eight or ten inches high marked the exterior boundary of the circle. Near the center of the circle was a great heap of dry wood from which a fire, in the center, was kept continually burning. At a sufficient distance from the pile of wood a trench, about 8 feet long, 6 feet wide, and 4 feet deep, was dug for the accommodation of the musicians, some six in number, three of whom beat drums and three rasped the bottoms of upturned flattish baskets upon which had been spread a layer of wax, an exudation from the mesquite. This when rubbed with a bone produced a sound somewhat between a squawk and a shriek. The drums were made of cottonwood logs carefully burned out, over each end of which was stretched a piece of half-tanned deerskin. The musicians kept time to a tune that

varied only according to the intensity of the requirements; they were in place and at work some time before the performance commenced. At a given signal the music stopped and two of the tallest and most athletic young Indians walked into the ring. They were naked save for a strip or thong of buckskin about the loins which was used for the purpose of binding to them wooden phalli. These instruments were about six or seven inches long and so bound that they stood erect from the bodies of the wearers. Each man in his right hand carried a large stone phallus, twelve or fourteen inches in length; the left hands were pressed tightly against their buttocks. Each took a position at the opposite end of the trench in which the musicians sat. After regarding each other for a time, the one nearest the fire said, "We are here." The other made answer, "Why are we here?" The first replied, "You will learn soon." Each then planted the stone phallus in an upright position at his feet and sprang out of the circle.<sup>1</sup>

On his reappearance each man carried in his right hand a slender stick, about four feet long, tipped with feathers of the wild turkey. They were immediately followed by nine other young men, all naked as the leaders and with wooden phalli bound against their bodies, but differing from the latter in having their bodies painted in alternate stripes of black and white. The leaders raised their wands and kept time with the music, which had recommenced on their return, and all sang in that low tone peculiar to Indians. With one in the lead the other ten danced in pairs. After circling the fire several times, the last pair dropped out and squatted in a half sitting posture near one of the stone phalli. At each successive turn two more would be similarly seated, six circling one emblem and five the other. At the appointed time the sixth man sprang erect with a yell and stood behind the musicians, which place and position he occupied during the remainder of the ceremonies. The other ten sprang erect in pairs, that is one from each group, and as they met they went through the various forms of men and animals in the act

<sup>1</sup> Interesting in this connection is the finding by the Hemenway Expedition in the prehistoric pueblo ruins of the Salado valley, within the Pima country in southern Arizona, in 1887-88, of several phalli, usually of tufa, although not so large as those here described. — EDITOR.



of copulation. This was continued, for probably half an hour or more, to the delight and approval of the interested mass of half-naked humanity that packed the outer edge of the circle. The actors then disappeared as suddenly as they had come, with the exception of the man standing erect behind the musicians. In a few minutes they again returned, minus the wooden phalli but naked as before except for a strip of buckskin or of trader's calico thrown across the shoulders. The two leaders continued to keep time with their feather-tipped sticks, while the other eight gathered handfuls of earth and threw it on one another, all the time singing and dancing around the fire, then jumped through the blazing mass, circled, and danced again. This last performance however was more of a run than a dance, and more of a yell than a song. It was repeated five or six times. At the end of the last round the two leaders separated and stood each by one of the two stone phalli. After regarding each other for a few moments in silence, they seized the two emblems and ran out of the ring. The other eight followed in single file, hopping one after the other in toad-like fashion. As they passed, the man standing behind the musicians threw a double handful of earth on each. He then disappeared. After this all who wished passed into the circle and danced as long as they pleased.

YUMA,  
ARIZONA.



**Edward Palmer.**—Dr Edward Palmer, for more than two generations an assiduous collector in ethnology and natural history, died on April 10, 1911. His work was confined principally to the Southwestern United States and Mexico, although during his long period of service he gleaned in many fields. The value of his collections lies in the early period of their acquisition and the care with which the data and the method of procuring them were recorded.

Dr Palmer made the first exploration of an ancient pueblo ruin, in 1873, a mound at St George, Utah, which he thoroughly searched, preserving every fragment of evidence that came under his trowel and carrying out the exploration with a skill and perfection of method that have not been surpassed in that field. This work was followed by archeological excavations on the lower Verde River in Arizona. His connection with the United States army in the west as Assistant Surgeon took him among the wilder tribes of the frontier and at this period he collected some of the most unique specimens ever obtained from the Apache.

Many branches of biology are indebted to Dr Palmer for first class material and the number of new species that rewarded his zeal is surprising. His ethnological material, to which he constantly added, is accounted among the most valuable in the United States National Museum.

Except in the earlier years, he did not publish his researches, being satisfied with the rewards of a diligent collector, who does his part well in adding to the stores of science.

WALTER HOUGH.

*Am. Anthrop. Vol. 13, No. 1, Jan.-March  
p. 173. 1911.*



## DUKE DE LOUBAT

The death of the Duke de Loubat in Paris was announced on March 1, 1927. Joseph Florimond Loubat, who received his ducal title from Pope Leo XIII, was born in New York City on January 31, 1831, and was hence ninety-six years old at the time of his death. He was the only child of wealthy parents and spent much of his time in Europe where he was educated chiefly at Heidelberg.

Loubat early took an interest in anthropology, history, and especially archaeology; he also did much toward financing scientific enterprises. His principal benefaction was the gift of \$1,100,000 to Columbia University. Other gifts to Columbia included valuable books and manuscripts and two prizes to be awarded every five years by the University for the best works written in English on the history, geography, archaeology, philology or numismatics of North America. Loubat endowed three professorships of American Archaeology; one at Columbia University, one at the University of Berlin, and one at the College de France in Paris. He also performed a signal service to American Archaeology in causing to be reproduced in facsimile several of the more important Aztec codices.

Loubat's services to the Roman Catholic Church were so highly appreciated that in 1893, Pope Leo XIII conferred on him the title of "Duke de Loubat." The French Government had already made him a "Commandeur de la Légion d'Honneur"; later, in 1907, he was elected a foreign associate member of the French "Académie des Inscriptions et Belles-Lettres."

Although living in Paris during the last thirty years and more of his life, the Duke de Loubat retained membership in the American Museum of Natural History, the Metropolitan Museum of Art, the New York Historical Society, and the following New York Clubs: Union, Knickerbocker, Union League, University, and New York Yacht and Tuxedo Club. He never married.

GEORGE GRANT MACCURDY



ALFRED PERCIVAL MAUDSLAY<sup>1</sup>

By ALFRED M. TOZZER

CENTRAL American insurrections may have some purpose after all. It was a revolution which prevented John L. Stephens from carrying out his diplomatic commission under President Van Buren in 1839. Instead he turned to exploration, and his four volumes on the Maya ruins have been the main incentive which stimulated the interest of other explorers and investigators. The greatest of these was Alfred Percival Maudslay.

Dr. Maudslay was born on March 18, 1850, at Tunbridge Wells, the son of Henry Maudslay of Woolwich, a famous English engineer and inventor, "one of England's finest craftsmen." He married Anne Cary Morris, of Morristown, New Jersey, a granddaughter of Gouverneur Morris, a member of the Constitutional Convention. She died in 1926. In 1928 he married Mrs. Purdon, of Fownhope, Hereford, who survives him. Surrounded by his flowers, Maudslay died on January 22, 1931, at his beautiful estate, Morney Cross, Fownhope, near Hereford, on a slope above the Wye river commanding a view of Hereford Cathedral and in the distance the Black mountains of Wales.

His education began at Harrow in 1863 and continued at Trinity Hall, Cambridge, from which he was graduated in 1872, where he gained a second class in the Natural Sciences Tripos. At school he tells us he was called "a barren tree" and "an arid desert." The untruth of these statements was soon shown.

Immediately after graduation, with a "great desire to see a tropical forest," he set sail with his brother for the West Indies. He visited Panama and traveled through a part of Guatemala, sailing from Acapulco to San Francisco. On a stage trip to the Yosemite he met Miss Morris, who later became his wife. He was in New York when Grant was elected, and came to Boston to see the smoking remains of its great fire.

In 1873 he visited Iceland. It was about this time that he gave up, on account of health, his first ambition to study medicine. The next year he again visited the West Indies with the intention of growing tobacco in Jamaica. A rigid quarantine compelled him to continue to Trinidad, where he entertained the idea of starting as a cacao planter. A fellow passenger to Trinidad was the newly appointed Governor, William Cairns. To fill a temporary vacancy he accepted the appointment as His Excellency's Private

<sup>1</sup> I am under obligations for aid in writing this memoir to Mrs. Arthur Laughton, H. J. Braunholtz, Henry N. Sweet, Ingersoll Bowditch, and an obituary note by L. C. G. Clarke.



Secretary. The Governor soon left, never to return, and Maudslay followed him to London. Maudslay's love of the tropics induced him to continue as Secretary to Sir William Cairns, this time in Queensland.

In 1875 he joined the staff of Sir Arthur Gordon in Fiji. For the next five years he served successively as Acting Colonial Secretary of Fiji, Deputy Commissioner for Tonga and Samoa, and as Acting Consul-General for the Western Pacific. This period of his life is delightfully covered in his last book, *Life in the Pacific Fifty Years Ago*. His success as a colonial administrator was great. His kindly and sympathetic nature made him an ideal type to treat with the natives, and his name came near ranking very high in the history of the Pacific when he completed negotiations with the Samoan chiefs for the unreserved cession of Samoa to Great Britain. Unfortunately, a previous agreement between his country and Germany perverted any advantage being taken of his understanding with the Samoans.

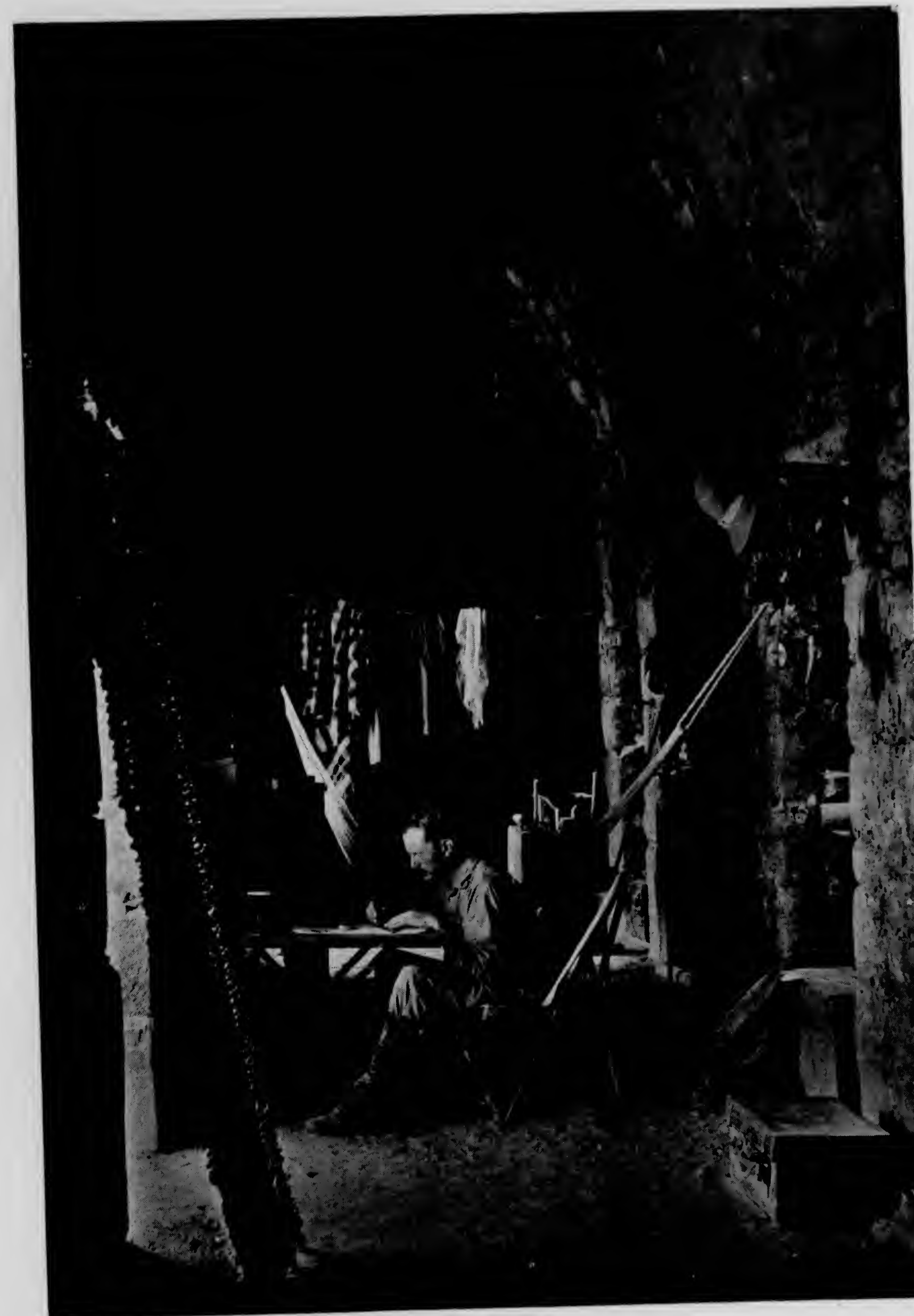
His fame, however, which might well have rested on colonial administration, came from his archaeological investigations in Central America. He writes:

The principal object of my first journey (to Central America) was not geographical or antiquarian research, but a desire to pass the winter in a warm climate. I had made no previous study of American archaeology, but my interest had been aroused by reading Stephens' account of his travels, and I started for Guatemala in the winter of 1880-1, in the hope that I might reach some of the ruins so admirably described by him. My success in this first trip was so much greater than I anticipated, that I returned to pass another winter in the country, provided with a larger photographic camera, and generally better equipped for the work.

This first trip in 1881 was the first of seven undertaken from 1881 to 1894, on the last of which he was accompanied by Mrs. Maudslay. He conducted these elaborate expeditions entirely at his own expense, together with photographing and casting. He writes:

I was at a loss to know how best to make use of my notes and collections, when Mr. Godman kindly offered to relieve me of all the expense of printing and the reproduction of plates, and to publish my work as an addition to the "*Biologia Centrali-Americana*," if I would supply all necessary photographs, drawings and plans, and a written memoir.

From this happy arrangement we have the four monumental volumes of plates and four of text covering Maudslay's archaeological work. These volumes have never been equalled in the excellence of the plates, the accuracy of the plans, and the detailed studies of the architecture and the carefulness of the drawings of the hieroglyphic inscriptions, done under Maudslay's direction by Miss Annie Hunter.



Dr. Alfred Percival Maudslay in "the living room" at the Monjas, Chichen Itza, Yucatan. (Photograph taken by Mr. Henry N. Sweet in 1889. Copies of this negative were kindly furnished both by Mr. Sweet and by Mr. Braunholtz.)



No one who has not traveled in the Guatemalan bush, and has not had to deal with an outfit of mules and the meager supply of adequate labor can well appreciate half the difficulties encountered by an explorer in this region over forty years ago. There is very little mention of these terrific handicaps in Maudslay's text, and yet they were there. In those distant days there were no "tropical plates" and other aids devised for the explorer in warm countries. The search for chicle in those regions had not begun, and trails, however poor, had not been made stretching in a network over the country. Only on his last trip, made with Mrs. Maudslay and delightfully described by them in *A Glimpse at Guatemala*, is there a personal picture of his travels. His great modesty is shown in the title of the book and in the last chapter, which is headed "Conclusions (?)."

It is needless here to enumerate the ruins he visited, several of which he made known to the scientific world for the first time. His plans, drawings, and photographs of Palenque, Quirigua, Chichen Itza, and many of the lesser sites have never been superseded. He gives grateful thanks to H. W. Price, who aided him at Palenque and Quirigua, and to Mr. Henry N. Sweet, who was with him at Chichen Itza. Coming down the Usumacinta river, he was the first archaeologist to reach the ruins of Menche (Yaxchilan), anticipating by a day or two the arrival of Charnay, who came up the river. I know of nowhere in scientific exploration where magnanimity is better shown than in his attitude to Charnay, who hoped to "discover" the ruins in the name of his patron, Pierre Lorrillard. Let Charnay describe the meeting.<sup>2</sup>

We shook hands; he knew my name, he told me his: Alfred Maudslay, Esq., from London; and as my looks betrayed the inward annoyance I felt: "It's all right," he said; "there is no reason why you should look so distressed. My having had the start of you was a mere chance, as it would have been mere chance had it been the other way. You need have no fear on my account, for I am only an amateur, traveling for pleasure. With you the case of course is different. But I do not intend to publish anything. Come, I have had a place got ready; and as for the ruins I make them over to you. You can name the town, claim to have discovered it, in fact do what you please. I shall not interfere with you in any way, and you may even dispense with mentioning my name if you so please." I was deeply touched with his kind manner, and I am only too charmed to share with him the glory of having explored this city. We lived and worked together like two brothers, and we parted the best friends in the world.

It was from this site that Maudslay took out several magnificently carved stone lintels which are now treasured possessions of the British Mu-

<sup>2</sup> *The Ancient Cities of the New World*, 435-6, London, 1887.



seum. At many of the sites he visited he took moulds of the bas-reliefs, and even of entire monuments by means of paper squeezes and sometimes of plaster. These were cast and presented to the Victoria and Albert Museum. After lying, entirely neglected, in storage for thirty years, and mainly through the energy and persistence of Captain T. A. Joyce, in 1923 they finally found a most suitable setting in the British Museum where they, together with the original lintels, and his other gifts, fill a hall suitably called "The Maudslay Room." This is the only hall in the entire Museum ever named for a man during his lifetime, and where the entire contents represent the work of one individual. Maudslay's casts are also to be found in the Trocadero at Paris, and in several American museums.

In 1891, through the initiative and aid of the late Charles P. Bowditch, another great patron and scholar of Maya research, the Peabody Museum of Harvard University had a ten year concession with Honduras to explore at Copan.<sup>3</sup>

In 1893-94, owing to the death of Mr. Owens, one of the archaeologists, no one was sent to the site by the museum, and Mr. Maudslay kindly consented to serve as its representative. In previous visits he had already examined the site, giving letters to the stelae discovered by him. While there in 1893-94, he completed the moulds of the inscriptions omitted from his earlier series and moulded others found by the museum.

Early in his studies of the Maya ruins, Mr. Maudslay was impressed with the great importance of the hieroglyphic inscriptions. He took special pains to photograph and mould, wherever possible, the hieroglyphs. From these Miss Annie Hunter made the famous drawings of the inscriptions which have been a boon to all students of this subject. With a very few exceptions, careful checking has failed to find inaccuracies in this remarkable work.

Cyrus Thomas in 1882 showed the true order of reading the inscriptions. Maudslay evidently did not know of this, as he wrote in 1886:

I am of the opinion that the tables of hieroglyphs should be read *in double columns, from left to right and from top to bottom*; but I am not in this paper able to give fully the evidence on which this opinion is formed.

In 1890, he speaks of the Thomas paper of 1882 and writes:

I myself came to the same conclusion from an entirely independent examination of inscriptions from Quirigua and Copan.

<sup>3</sup> In looking through the long and intimate correspondence between Mr. Maudslay and Mr. Bowditch, I find that Mr. Maudslay's advice was sought at every point in the plans and outfit of the early Peabody Museum expeditions to Copan. Furthermore, Dr. Gordon and Professor Saville, leaders of these trips, took over many of the Maudslay personnel.

As early as 1886 he recognized the formula of the beginning of many of the inscriptions, when he writes:

One of the most interesting points which I have noticed is that all the inscriptions which I have reason to believe are complete from the commencement, are headed by what I shall call an initial scroll (the type of which is permanent throughout many variations), and begin with the same formula, usually extending through six squares of hieroglyph writing. The sixth square, or sometimes the latter half of the sixth square, being a human face, usually in profile, enclosed in a frame or cartouche.

Part 2 (vol. 1) of the *Biologia* appeared in 1890, and on plate 31 he has a famous drawing, placing side by side the first glyphs of several inscriptions. These he names the "Initial Series" for the first time, and notes the difference between the inscriptions with numbers and those without, noting that the number in the first glyph is almost invariably nine. It is indeed probable that it was Maudslay who suggested to Goodman the possibility of the face numerals which Goodman later worked out. Maudslay also recognized the rosette form for twenty, and the double number on the Uinal glyph of what, later, was called the Secondary Series. He writes, in part, as follows:

It will be found that many inscriptions are preceded by what I propose to call a "heading." . . . This heading is very frequently followed by what I propose to call the "Initial Series" of glyphs. There are two principal forms in which this initial series occurs. One is a series of six glyphs, each glyph composed of two characters—usually two heads without any numerals attached to them; the other is a series of six characters occupying six or a less number of glyphs, each character having a numeral attached to it. Each character in the single series is usually identical with one of the characters from the glyph in the corresponding position in the double or two-character series. In some cases there is a mixture of the two series. The initial series is to be found in inscriptions throughout Central America.

Not content with his own imperfect knowledge of the hieroglyphs, he was eager to find someone who would make the Maya inscriptions his life work. In a letter to his friend and fellow enthusiast, Mr. Charles P. Bowditch, dated at Guatemala, December, 19, 1892, Mr. Maudslay tells of his journey across the United States, first visiting the Chicago Fair and then San Francisco. He continues:

I think I told you that for some years I have been corresponding with a Mr. Eisen in San Francisco. He was away in Mexico when I first arrived but I saw a good deal of his partner, Mr. Goodman, and it is he, apparently, who has done most of the work at the inscriptions and not Mr. Eisen. It seems to me that he has really made some advance, and it is principally in the direction in which I anticipated that discoveries would be made, that is, in the comparative study of the "Initial Series" which he



finds gives him a date. I was not able to make any careful investigation of his system but from what I can see it appeared to work out correctly and I have done my best to get him to publish his method and the calendars which he has worked out.

This visit to Goodman resulted in Maudslay urging him to come to London to see all the material gathered in the field. This Goodman did in 1895. He writes in the preface to the appendix to Maudslay's *Biologia*:

The appearance of this fragment now, in its unfinished state, is due to a request of Mr. Alfred P. Maudslay, who desires to have chronological tables . . . so that he may be able to refer to them during the course of publication of his magnificent work on the archaeology of Central America . . . .

There is history attached to the printing of this fragment. Mr. Maudslay, during one of his visits to our coast, urged the importance of its publication upon some of the officials of the Californian Academy of Sciences; but . . . they could not clearly see their way to any excuse for assuming the cost of printing this little book. It remained for Mr. E. [F.] DuCane Godman and Mr. Osbert Salvin, of London, to invite the publication of it at their private expense, and to incorporate it, for all of its unworth, in their monumental work, the *Biologia Centrali-Americana*.

This is not the time and place to record the most important advances made by Goodman in the study of the Maya inscriptions. It is no doubt true, however, that to Mr. Maudslay and his work we owe indirectly the Goodman contributions.

The artistic side of the Maya carvings and bas-reliefs were of special interest to Maudslay. His analysis of the designs by colored drawings has been a unique contribution. Nowhere else do we find so clearly represented the intricate and confused designs of the Mayas. The drawings of the bas-reliefs at Chichen Itza and Palenque especially and those on the Copan and Quirigua stelae and altars are noted examples of Miss Hunter's careful work supervised at every step by Maudslay.<sup>4</sup> He also inspired Miss Adela Breton to spend many weary years copying the Chichen frescoes, and making reproductions of ancient maps of Tenochtitlan.

<sup>4</sup> A worthy tribute to the late Miss Hunter, which I feel sure Mr. Maudslay would have liked to have included here, was paid by Goodman, who undoubtedly saw her at her work in London. In his preface he writes: "The illustrations in these pages are by Miss Annie Hunter, who has done nearly all the drawings for Maudslay's series of publications. Her experience and artistic skill render her reproductions faultless. The certainty with which she can trace the glyphs of a nearly obliterated inscription amounts almost to divination. No mere perfunctory discharge of duty satisfies her; her whole soul is in her work, aquiver with anxiety to attain the best and truest result. Students who have not had an opportunity for comparing the mutilated originals with her perfect restorations will never know the full debt they owe this admirable artist."

His interest in maps—of which he had a large collection—shows clearly in that of the peninsula of Yucatan, which he published in his *Biologia*. It is a compilation, laboriously assembled from many sources, and still stands as the best map of this region. This interest in maps comes out very clearly in his definitive edition of the old Conquistador, Bernal Diaz. His translation of this masterpiece, published by the Hakluyt Society, will stand as his second monument. The voluminous notes show the research scholar. The numerous illustrations and the volume of reproductions of ancient maps of Mexico and the environs of the ancient Tenochtitlan are contributions of the greatest value to early Spanish-Mexican history.

Mr. Maudslay exceedingly disliked controversies, and he declined to take part in them even when his views were challenged. The much heralded claim of Dr. G. Elliot Smith of Asiatic influence in Central America and the presence of elephants in the Maya area only once drew his fire. In a long article in the London Times of January 14, 1927, headed "Elephants or Macaws? Asia and American Civilization. A New Discovery," Dr. Smith made use of some discarded drawings of Waldeck, made almost a hundred years ago, which were discovered in a Chicago library. They were fanciful drawings of elephants at Palenque. It seems evident that Waldeck himself had little regard for their faithfulness, as he did not include them in his published work. The concluding sentence of Dr. Smith's article reads as follows:

The definite settlement of the elephant controversy marks a revolution in ethnology.

This was too much for even peace-loving Mr. Maudslay, who had spent months at Palenque studying every carving and relief. He had compared all of Waldeck's published drawings with the originals and knew well their inaccuracies, and *he* had found no elephants at Palenque. Writing from Egypt, he sent the following letter to the London Times, which was printed on February 14, 1927:

I have just now seen in "The Times" of January 14, the copies of drawings by F. de Waldeck of Maya sculptures at Palenque, which have been recently found at Chicago, and Professor Elliot Smith's letter in the same issue. At this distance from home, and with no books to refer to, it is impossible to go into details. However, if any of your readers will compare Waldeck's drawings with the photographs and drawings in the Palenque volume of the "*Biologia Centrali Americana*" (Archaeology), or the casts from Palenque in the British Museum, I have no doubt they will be convinced of Waldeck's inaccuracy and the worthlessness of his drawings in support of Professor Elliot Smith's views.



From the time he left off active archaeological field work in 1894, until 1907, he usually spent six months in Mexico. For several years he was at Zavaleta, near Oaxaca, working a small gold mine which he had inherited. His last year in Mexico was spent at San Angel. During the later years of his life he traveled in the Balearic islands, Spain, Italy, and Egypt.

The list of his honors is a long one. In addition to being Honorary Fellow of Trinity Hall, he received the Hon. Sc. D. from Cambridge and the Hon. D. Sc. from Oxford in 1912, in which year he was the President of the Royal Anthropological Institute and the Chairman of the Organizing Committee and President of the International Congress of Americanists in London. He joined the Royal Geographical Society in 1884, and was an Honorable Secretary for several years. He was also a member of the Council of the Hakluyt Society. An Honorary Professorship in the Museo Nacional at Mexico City was something of which he was always proud. He also held Honorary memberships in the Société des Américanistes of Paris, the American Antiquarian Society, the American Academy of Arts and Sciences, and the American Anthropological Association, and was a corresponding member of the Berliner Gesellschaft für Anthropologie. In 1926 he received the Rivers Memorial Medal of the Royal Anthropological Institute. He was also a leading figure in many of the Herefordshire local scientific and philanthropic organizations.

He bequeathed his valuable Mexican manuscripts, books, pamphlets, and a very extensive collection of ancient maps to the British Museum, and his Fijian collection to the Cambridge University Museum. The invaluable Gouverneur Morris papers which he inherited from his wife were left to the Library of Congress, Washington.

Mr. Maudslay was a man who was fond of simple things. He surrounded himself with a garden wherever he happened to live—in Fiji, at Zavaleta, and at Morney Cross, where, during the last years of his life, he spent hours planning and planting, weeding and pruning his flowering terraces. His wide interests included a knowledge of embroideries and of old furniture; he was an excellent photographer, and a keen fisherman. Without exception, Mr. Maudslay's pioneer work in Maya archaeology is the greatest single contribution to this study. Inspired by Stephens, he, in turn, inspired many others to select the Maya field for research and exploration.

His aim was perfection, and his published scientific works show that his ideal was accomplished. As a scholar, he refused to be satisfied with hazy generalizations, and sought the truth. His gentle nature, his retiring disposition, and his great modesty were outstanding characteristics. He was without guile. One can often wonder as to his reactions to the modern scientific

expeditions with their aeroplanes and motors, their staff of secretaries, moving picture operators, and, most necessary of all, publicity agents. His own splendid accomplishments were unheralded in the press, and were generally unrecognized except by a few faithful friends and fellow archaeologists until toward the last twenty years of his life. Mr. Maudslay's work can never be equaled. During the last forty years, time and man have worked havoc with the Maya ruins. Priceless records have now disappeared, but many of them are permanently recorded in the monumental volumes of the *Biologia Centrali-Americana*. And Maudslay's schoolmates at Harrow called him "a barren tree!"

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ANTHROPOLOGICAL NOTES AND NEWS

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Biographies and obituaries

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Clippings from Science

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all but two of which spoke favorably of the project. The secretary (Williams) reported answers from thirty persons, and S. A. Miller reported answers from six persons, all favorable, making a total of one hundred and twenty-six opinions in favor of and only two dissenting from the formation of the proposed society.

A committee consisting of Jed Hotchkiss, R. Whitfield and C. H. Hitchcock, appointed to consider the situation, recommended that the first step to be taken should be the establishment of a geological magazine. This report was accepted and adopted; the Cincinnati committee also reported a proposed constitution, which was discussed and laid upon the table pending further labors by the committee and a report at the Minneapolis meeting in 1883.

At the Minneapolis meeting of the American Association for the Advancement of Science (1883) those who had been active for the proposed geological society met August 21, and listened to further discussions and some objections. Some dilatory motions were brought forward, viz., that a committee be appointed to confer with the Mineralogical and Geological Section of the Philadelphia Academy of Sciences with reference to the formation of an American Society and the establishment of a geological magazine. Prior to this a committee had been appointed with instructions to confer with Major J. W. Powell to ascertain what encouragement could be afforded by him in the support of a geological magazine. These special committees, however, accomplished nothing, except to delay the project, and to discourage those who were in favor of the proposed society; and the friends of the new movement became very much discouraged by the expression of unfavorable views at Minneapolis. These adverse opinions were stated by several of the oldest and most prominent geologists; and they served to dampen the ambition of those who, though younger, had been zealously promoting the proposition.

Four years later various causes led some of these opponents to change their minds and to solicit a continuation of the plan that had

been proposed. And in particular the speaker recalls such correspondence with Dr. J. S. Newberry.

The chairman and the secretary of the moribund organization, Winchell and Hitchcock, convinced that nothing would be done by other parties, under implied instructions and responsibility from the meeting at Minneapolis, by virtue of their office sent out a call to meet at Cleveland, Ohio, in connection with the American Association for the Advancement of Science, 1888. The call as issued provided that the new society should be composed only of members of Section E of the American Association. This was in consequence of fear, expressed by some of the older geologists, that such an organization would clash seriously with the Association; and their love for the Association, with which they had been connected actively for many years, was greater than for any new geological organization, which appeared to them like a phantom which would be likely to have only an ephemeral existence.

Meanwhile several geologists, depending largely on the action of the Montreal meeting, and on the frequently stated advice of individual geologists, unwilling to delay longer the issuance of a geological magazine, boldly took the initiative and established the *American Geologist*, the first number appearing January, 1888. The call for the Cleveland meeting appeared in the *Geologist* for June, 1888.

It is enough to say, further, that this call met a cordial reception and that at Cleveland very much renewed interest was evident. Committees were appointed to prepare a constitution, and this constitution was adopted at a meeting held at Ithaca, New York, in December, 1888, the present meeting being the twenty-fifth anniversary of its adoption.

#### ALEXANDER FRANCIS CHAMBERLAIN

DR. ALEXANDER FRANCIS CHAMBERLAIN, professor of anthropology in Clark University, died April 8, 1914. He was born in Kenninghall, England, in January, 1865. In early life he came to Canada and took the degree of A.B. at the University of Toronto in 1886, and A.M.



in 1889. From 1889-90 he was librarian of the Canadian Institute at Toronto. In 1890 he was appointed to a fellowship in Clark University, where he took the Ph.D. degree in 1892. Shortly after he was appointed lecturer in anthropology and later promoted to a full professorship.

Professor Chamberlain was an expert bibliographer and editor. For many years he contributed systematic bibliographical notes to the *American Anthropologist*, which have been of great value to American students, especially since his great linguistic knowledge enabled him to give digests of all important foreign publications. It is in this respect that his loss will be most keenly felt. As an editor he was for many years in charge of the *Journal of American Folk-Lore* and actively associated with President G. Stanley Hall in the editorship of the *Journal of Religious Psychology*. He was also an associate editor of the *American Anthropologist* and of the *American Antiquarian*. He was an important contributor to the *Encyclopedia Britannica* and many other reference books. As a writer, he possessed more than average skill, having contributed many charming articles to the *Atlantic Monthly* and other magazines.

His special line of research was linguistics. In 1891 he made a special study of the Kootenay Indian language of British Columbia under the auspices of the British Association and collected considerable data on their culture; unfortunately, the greater part of this is still unpublished. In addition to the study of certain Algonkin linguistic problems, Professor Chamberlain worked over the linguistics of South America and prepared a map of the continent similar to the famous Powell map of North America. This work was recently published and, though still to occupy the attention of the author, had he lived, is probably about as complete as the data available make possible. Though necessarily tentative, it marks a distinct advance in South American anthropology.

His best known works are the "Child and Childhood in Folkthought" (1896) and "The Child: A Study in the Evolution of Man" (1900), subjects which were quite suggestively

developed in his lectures to students of psychology and education.

C. W.

#### THE GENERAL EDUCATION BOARD

THE spring meeting of the General Education Board—the foundation endowed by Mr. John D. Rockefeller—was held on May 29. In attendance were Chas. W. Eliot, Albert Shaw, H. B. Frissell, Anson Phelps Stokes, John D. Rockefeller, Jr., F. T. Gates, E. L. Marston, Jerome D. Greene, Starr J. Murphy, Wallace Buttrick and Abraham Flexner. Ambassador Page, President Judson and Dr. Wickliffe Rose were absent abroad. The membership of the board was increased by the election of President George E. Vincent, of the University of Minnesota.

At the close of the meeting announcement was made that appropriations aggregating \$1,400,000 had been made. The most important of these was a gift of \$500,000 to the medical school of Yale University. As had been previously announced, the General Education Board has decided to provide funds necessary to enable properly located and organized medical schools to command the entire time and energy of their teachers in the main departments of medicine and surgery. For this purpose a million and a half dollars has already been appropriated for the Johns Hopkins School, and \$750,000 for Washington University. This gift of \$500,000 to the Yale Medical School was made on condition that the school procure complete teaching and medical control of the New Haven Hospital, and that the teachers in the main clinical branches be placed on the full-time or university basis.

In conformity with its previous policy of making gifts to increase the endowment and extending the usefulness of promising and serviceable institutions in various parts of the country, the following appropriations were made:

Stevens Institute of Technology .....	\$250,000.
Elmira College .....	100,000.
Hendrix College .....	100,000.
Washington and Lee University .....	125,000.
Wells College .....	100,000.
Wofford College .....	33,000.



tribution for the preparation and publication of a bibliography on fishes. The Duke of Bedford was elected a fellow for his generosity in presenting to the museum two fine examples of the Prjevalsky horse, a species which has hitherto been unrepresented in the collections. Mr. Anthony R. Kuser was elected a fellow in recognition of his offer to present to the museum a collection of pheasants of the world. Lieutenant George T. Emmons was made an honorary fellow in recognition of his services in furnishing information in regard to the Indians of the Northwest Coast and in promoting field work in this region. Mr. George Bird Grinnell was elected an honorary fellow in recognition of his services in the development of the museum's department of anthropology. Sir Ernest Shackleton was elected a life member in recognition of his splendid achievements in the field of exploration, as well as for his generosity in presenting to the museum a collection of minerals from the south polar region. Dr. Leonard C. Sanford was made a life member in recognition of his generosity in placing his superb collection of birds of the world at the disposal of the curators of the museum for study and reference.

#### CATLIN PAINTINGS

George Catlin was the first great Indian painter and writer. He was born in Wilkesbarre, Pennsylvania, in 1796, was educated as a lawyer, but in 1823 gave up the profession for art, opening a studio in Philadelphia. A few years after he painted the famous portrait of Mrs. Madison and that of Governor De Witt Clinton, now hanging in the City Hall of New York. He early became a miniature painter, a collection of his works being in the hands of a private collector in Minnesota. Once a delegation of Indians passing through Philadelphia on the way to Washington so impressed Catlin that he planned to travel and paint the various wild tribes. Accordingly he set out and spent eight years, during which time he visited forty-eight different tribes, making portraits and sketches of scenes from daily life. Some years afterward he issued

a large illustrated work on the North American Indians which is still one of our most important publications. Mr. Catlin died in New York City in 1872, leaving in the hands of his daughter, Miss Elizabeth W. Catlin, a large collection of paintings and sketches, which has just been acquired by the museum.

This collection, comprising some 350 oil paintings, represents chiefly the tribes between the Mississippi and the Rocky Mountains as observed during the years 1832 to 1840. Many of them are the originals for the plates in the author's well-known books. Their historic value is very great, as they are the earliest authentic sketches representing the costume, ceremonies, habitations, etc., of the wild tribes. At the time Catlin visited these tribes they were practically uninfluenced by civilization. A well-known artist says: "This collection is by far the most interesting and complete in existence and for the Indian artist is invaluable, the subjects represented covering the entire life, costumes, ceremonies, etc., at a time when Indian life was real, that is, before the transition period in Indian history. I have known Indians for forty years and have seen many who were very little influenced by contact with the white man and I can vouch for the truthfulness of these pictures. They are, outside of Bodmer's and Captain Eastman's pictures, the only record we have of the Plains Indians and are valuable as a pictorial record. I want to speak of another view which the scientist does not appreciate. These Catlin pictures are the most decorative Indian pictures that have ever been painted. There is not a picture in the collection that I would not be proud to hang on my wall. They have a grand beauty of line composition, a great harmony of tone that makes them very valuable as works of art. They have the scenic charm of a Japanese print."

Thus, Catlin may be considered the original Indian artist, the predecessor of Curtis, Schoolcraft, McKenna and Hall and a host of lesser lights. For the museum, the collection will be especially valuable, since it gives us not only highly decorative canvasses, but illustrative series which may be installed



among the ethnological collections where the various scenes will show to the visitor Indian life as it once was.

Perhaps the most unique portion of the collection is the South American sketches. Alexander von Humboldt, whom Catlin met in Europe, was so impressed with the work that he urged Catlin to spend some time traveling in South America. Accordingly, in 1852, Mr. Catlin set sail for Venezuela, from whose coast he passed into the interior and over into the valley of the Amazon. For six years he explored South America, visiting all the tribes on the Pacific Slope, wandering through Yucatan, and portions of Old Mexico and later sailing for Buenos Ayres, from whence he ascended the Parana River to the north and again traversed the entire coast line of Patagonia through the Straits of Magellan. As a result of this work we have ninety canvasses representing characteristic scenes among the natives of tropical and other portions of South America.

#### BAILEY METEORITES

Through the generosity of Mr. J. P. Morgan, Jr., the museum has acquired the collections of meteorites and minerals that were left by the late Mr. S. C. H. Bailey. Mr. Bailey was an indefatigable collector and exchanger in both branches of science, and his series of meteorites was known as one of the largest in private hands in the number of falls and finds represented. About three hundred meteorites were received by the museum, many of which are new to its already large collection. The most important fall represented is that known as Tomhannock, on account of its having been found on Tomhannock Creek, near Troy, Rensselaer County, New York. Only six meteorites, four iron and two stone, have been discovered within the limits of the state, five of which have been cut up and distributed throughout the collections of the world and most of the larger pieces are in European museums. The main mass of Tomhannock, however, remained with Mr. Bailey, and the museum is fortunate in coming into possession of it. It is an aerolite, or stone meteorite, which was first discovered in 1863,

but was not described until 1887, when Mr. Bailey gave it its present name. The entire original mass weighed only about three and one half pounds, was well rounded and covered with the fusion crust so characteristic of meteorites. Only about one tenth of the original mass was cut off and divided among museums. Hence the part that has now come to the American Museum is nearly nine tenths of the original.

#### SCIENTIFIC NOTES AND NEWS

LORD LISTER died at his home in London on February 11 at the age of eighty-four years.

At the annual meeting of the Royal Meteorological Society on January 17 the president, Dr. H. N. Dickson, presented to Professor Cleveland Abbe, of the U. S. Weather Bureau, Washington, the Symons gold medal for 1912, which had been awarded to him in consideration of his distinguished work in connection with instrumental, statistical and dynamical meteorology and forecasting.

M. MAURICE MAETERLINCK, who last year received the Nobel prize for literature, proposes to raise the sum to \$40,000, and to employ it to establish a biennial prize of \$3,200 to be awarded to the author of the most remarkable work—whether on literature, art or science—published in the French language.

SIR WILLIAM RAMSAY, for twenty-five years professor of chemistry at London University, has submitted his resignation, and the senate has resolved: "That the senate accept Sir William Ramsay's resignation with sincere regret, and desire to express to him their high appreciation of the services which he has rendered to the university both by his inspiring work as a teacher and by the great series of researches carried out by him at University College during his tenure of the chair of chemistry."

PROFESSOR RUBNER, director of the Berlin Hygienic Institute, has received the large gold Rinecker medal of the University of Würzburg.

We learn from *Nature* that the Rhodesia Scientific Association's gold medal, recently



sity of Marburg where he taught for two years, 1891 and 1892. At the same time he was editor of the *Ausland*, an old, well-established journal that contained particularly ethnological and geographical information. The duties of these positions were not congenial to him because they absorbed too much of the time that he wished to devote to research, and soon he returned to Berlin where, in 1896, he was elected president of the Berlin Geographical Society.

His interest in the problems of the Pacific Ocean never flagged. In 1897 he went to the Marquesas Islands. He visited every island and every village and amassed most valuable ethnological material. On his return journey in 1898 he visited some of the northwestern tribes of Canada. Then followed years of unremitting study. He was never satisfied with the mere collection of material but saw in it a means of solving problems. Ever since his Brazilian journey the question of primitive art was uppermost in his mind, and the interpretation of the curious and intricate forms of Marquesan art was one of the attractions that this remote group of islands held out to him. With indefatigable persistence he visited all the museums of Europe and America and accumulated material for the study of the historic development of Marquesan art during the period of our knowledge of the islands. His purpose was the attempt to reconstruct the earlier history of this art. Work on this particular problem was interrupted by the duties which he undertook as director of the South American department of the Ethnological Museum of Berlin, a position which he occupied from 1902 to 1906. Again he found that administrative duties made too heavy demands on his time and he returned to the problems that interested him most profoundly.

During this period he took a most active part in the scientific life of Berlin. From 1908 to 1910 he was president of the Berlin Anthropological Society, and his house was the center to which all interested in ethnological studies resorted. It is largely due to his influence that Germany has taken a prominent part in anthropological work in South America. Paul Ehrenreich, Max Schmidt and Theodor Koch-Grünberg were all stimulated by his enthusiasm.

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of technique and of constant reinterpretation. The wealth of material and the penetrating analysis of forms are such that now, since the book has been in our hands only a short time, it is quite impossible to assess fully its value, but there can be no doubt that his method of examination sets a new standard for all studies of similar subjects, not only in art but equally in religion, ceremonial life, social structure and invention. We deeply regret that it was not given to him to work out by similar methods the large mass of traditional literature that he collected. His Marquesan work stands out as an example of thoroughness and of critical acumen.

In his younger years von den Steinen, because of his wide knowledge and his rare social gifts, exerted a wide influence, but as he grew older he retired more and more to his study. His counsel was sought but he did not take an active part in scientific affairs. His personal charm and his loyalty endeared him to all who had the privilege of knowing him intimately, and his friends mourn his death no less as a personal loss than as a loss to science.

FRANZ BOAS

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A CORRESPONDENT writes that Emile Francis Williams, a charter member of the New England Botanical Club and from 1896 to 1917 its recording secretary and treasurer, died at his home in Cambridge, Massachusetts, on December 19, in his seventy-second year. He was born in Boston on January 11, 1859, and spent his early youth in France, where he received his early education in Paris. Returning to America he continued his studies at the Massachusetts Institute of Technology, from which he was graduated from the civil engineering course in 1878. For many years he engaged in business as an importer of rugs and other oriental goods of rarity, devoting, however, much of his time to the pursuit of botany. He made frequent visits to the less explored portions of New England and the adjacent parts of the Maritime Provinces. He had exceptional skill in the selection and preparation of plant-specimens and built up a personal herbarium of unusual excellence. This, including about 14,000 sheets of mounted specimens, he gave to the Gray Herbarium of Harvard University, of which he had, for many years, been a highly valued member of the visiting committee. He was one of the founders of the New England Botanical Club and during more than twenty years devoted much care to its exploring activities, the upbuilding of its col-



highly specialized arboreal ape hand; the opposable human thumb could not spring back from the partly atrophied anthropoid ape thumb. Our quadrupedal ancestors certainly had a forefoot capable of developing into the human hand with its long flexible fingers separately innervated and its thumb which, as Erasmus Darwin postulated, could reach the tip of each finger in turn, all depending upon separate innervation from special cell centers in the spinal cord and brain. Primitive man is not only a tool-making animal, he is a music-making animal; consider "Blind Tom," the negro musical genius of his day, who not only possessed an excellent finger technique but a marvelous musical memory that enabled him after a single hearing to repeat elaborate piano compositions. In this human hand connection let us recall also the researches of Sir Richard Paget in advocating the gesture origin of human speech, as gesture demands flexible fingers.

Third, to this hundred per cent. structural equipment of our remote ancestors phylogeny adds a hitherto unperceived germinal potentiality of specialization along certain pre-determined directions rather than others in adaptive reactions to changes of environment; this *teleogenesis* rests upon thousands of observations among primates, horses, titanotheres and elephants which prove that parallel anatomical

and psychical progress is traceable to germinal community of origin. The psychic resemblances of the apes to man are partly parallelisms, partly common inheritance (Yerkes). *Teleogenesis* is not to be confused with the old "teleology," nor is it a revival of a hypothetical vitalism or internal perfecting tendency.

Finally, and perhaps from glandular impulses (Keith), phylogeny proves that independent of selection, of environment, of habit, certain phyla exhibit rapid or accelerated physical and mental adaptation, while others are held back. The creative brain, the tool-making hand, the fleet hind limb of man apparently combine in accelerated adaptation, while forest-loving primates advance much more slowly.

Does not this unbiased survey of recent discoveries in archeology, human and comparative paleontology and human and comparative anatomy, compel us to reconsider the classic Darwin-Lamarck hypothesis and to substitute a new hypothesis? The new hypothesis carries us into a geologic antiquity hitherto undreamt of. Anthropology is forced to share with chemistry and physics entirely new notions of space and time. To my mind the human brain is the most marvelous and mysterious object in the whole universe and no geologic period seems too long to allow for its natural evolution.

## OBITUARY

### KARL VON DEN STEINEN

THROUGH the sudden death of Karl von den Steinen, which occurred on the fourth of November, 1929, anthropology has lost one of its most eminent representatives.

Born in 1855 at Mühlheim a./d. Ruhr, he attended the Gymnasium of Düsseldorf, from which he graduated in 1871. He studied medicine at the Universities of Zurich, Bonn and Strassburg, devoting himself particularly to psychiatry. He was assistant at the Charité in Berlin, but soon he gave up this position and took a journey around the world which lasted from 1879 to 1881. On this journey he met Adolf Bastian in Hawaii and accompanied him on his visits to the natives. Bastian's enthusiasm for ethnological problems, the varied experiences of the long journey and contact with many foreign cultures were probably the causes that determined von den Steinen's ever-increasing devotion to the problems of anthropology.

At that time, however, geographical problems were nearer to his mind. In 1882 he was a member of the German party in charge of the meteorological station in South Georgia—one of the series of stations that were to observe for a year the meteorological and

magnetic conditions in both circumpolar regions. Later on he published his observations, made during this year, on the life of the seals and birds of South Georgia. Immediately upon his return in 1884 he organized an expedition through Central Brazil and explored the Xingú, one of the southern tributaries of the Amazon, which up to that time was entirely unknown. This journey yielded important geographical results and at the same time brought him into close contact with the primitive natives of this area who were at that time still almost entirely untouched by European civilization. His account "Durch Zentral Brasilien" gave the results of his observations. Not satisfied with the completeness of his studies, he returned to Brazil in 1887 and devoted himself entirely to the study of the natives of the Xingú region. For several years after his return he was occupied with work on the results of this expedition which was finally published in 1894 under the title, "Unter den Naturvölkern Zentral Brasiliens," a book which has become one of the classics of ethnological literature. He published his linguistic observations in 1892 as a grammar of the Bakairí language.

Meanwhile he had accepted a chair at the Univer-



sity of Marburg where he taught for two years, 1891 and 1892. At the same time he was editor of the *Ausland*, an old, well-established journal that contained particularly ethnological and geographical information. The duties of these positions were not congenial to him because they absorbed too much of the time that he wished to devote to research, and soon he returned to Berlin where, in 1896, he was elected president of the Berlin Geographical Society.

His interest in the problems of the Pacific Ocean never flagged. In 1897 he went to the Marquesas Islands. He visited every island and every village and amassed most valuable ethnological material. On his return journey in 1898 he visited some of the northwestern tribes of Canada. Then followed years of unremitting study. He was never satisfied with the mere collection of material but saw in it a means of solving problems. Ever since his Brazilian journey the question of primitive art was uppermost in his mind, and the interpretation of the curious and intricate forms of Marquesan art was one of the attractions that this remote group of islands held out to him. With indefatigable persistence he visited all the museums of Europe and America and accumulated material for the study of the historic development of Marquesan art during the period of our knowledge of the islands. His purpose was the attempt to reconstruct the earlier history of this art. Work on this particular problem was interrupted by the duties which he undertook as director of the South American department of the Ethnological Museum of Berlin, a position which he occupied from 1902 to 1906. Again he found that administrative duties made too heavy demands on his time and he returned to the problems that interested him most profoundly.

During this period he took a most active part in the scientific life of Berlin. From 1908 to 1910 he was president of the Berlin Anthropological Society, and his house was the center to which all interested in ethnological studies resorted. It is largely due to his influence that Germany has taken a prominent part in anthropological work in South America. Paul Ehrenreich, Max Schmidt and Theodor Koch-Grünberg were all stimulated by his enthusiasm.

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5. PSYCHOLOGICAL TYPES IN THE CULTURES  
OF THE SOUTHWEST

RUTH BENEDICT

A culture may be studied by analysis of its component traits; it may also be characterized by defining the type of individual psychology institutionalized in the group. The degree of integration of type differs with cultures as with individuals, but in strongly marked cultures the dominant attitudes of the group play a leading role in cultural history, discarding unadaptable traits, revamping others, setting up strict barriers against the intrusion of alien values.

From this point of view the pueblo culture can be differentiated. The dominant cultural traits of the surrounding region may be termed, in Nietzsche's sense, Dionysian: the universal acquisition of power through a stress experience pushed to psychopathic extremes, the peyote and datura cults which attain similar ends, the frenzy of mourning ceremonies and the institutionalized uncleanness of menstruating women, the conventionalization of religion under the figure of intoxication as among the Pima. Such cultures create situations and concepts by which to break through routine or normal levels of experience. The pueblos on the other hand are blind to this valuation and have discarded or resisted all these beliefs and practices. This culture, which corresponds closely to what Nietzsche has called the Apollonian, values normal psychic experience and formal living, the mean in the old Greek sense. They have a religion of fertility without orgy, high development of the dance without using it to arrive at abnormal psychic experience either individually or as a group, an order of priests who attain their dignity through status relationships and the knowledge of ritual. The cultural situation in this region is unintelligible without taking into account the dynamic force of the well-defined psychological type in the civilization of the pueblos.



123. THE NATCHEZ SOCIAL CLASS SYSTEM

By

J. P. B. DE JOSSELIN DE JONG

For different reasons, Dr. Swanton's diagrammatical representation of the Natchez system published seventeen years ago is still undebatable. Our opinion about the genesis of this system will largely depend on our views about the historical and psychological relations between various systems of dual organization. In organizations of the Omaha type we are to see a cultural phenomenon of fundamental importance; it cannot be doubted that this type of social organization has come into existence spontaneously in more than one part of the globe. There are indications that it was also represented in the southeastern part of the United States. If we start from the working hypothesis that at some time it was predominant all over this area, the cultural situation as we know it becomes much less enigmatic. It appears then that with different tribes the ancient system has undergone various transformations. Wherever the two exogamous phratries have disappeared, some of their functions are being carried on by other social groupings, e. g. a dichotomy of men into two societies. A comparative study of the various systems seems to bear out Dr. Krickeberg's view that the two Natchez social classes have grown out of the ancient exogamous phratries. The subdivisions of the nobility must be genetically related to the ancient graded clans and the peculiar rules of descent with regard to class membership may be explained as a compromise between the strict observance of class exogamy and the growing tendency to endogamy which characterizes the Natchez organization as a nascent caste system. Peculiarly illuminating in several respects are the closely related forms of social organization in the islands of San Cristobal and Ulawa (Central Melanesia).



Aug. 11, 1916.

another time cold. The degree of comfort that is felt—which should not be allowed too potent an influence in deciding what one's environmental conditions shall be—depends, moreover, largely on the thickness of the clothing and on habit. It is surprising how readily one's habits in this respect may be altered. Uniformity in conditions should be avoided; too long a continuance of an existing temperature is dulling to the body; there should be not infrequent and marked changes. Artificial ventilating systems should not necessarily be condemned, but should be operated intelligently and may advantageously be combined with window ventilation.

In these days we hear much of "fresh" air and its merits. We have fresh-air funds, fresh-air schools, and fresh-air babies. All are commendable; but while giving to our funds, opening our schools, and putting our babies out of doors, let us clearly understand what constitutes fresh air. The freshness of so-called "fresh" air lies, not in more oxygen, less carbon dioxide, less organic matter of respiratory origin, and the hypothetical presence of a hypothetically stimulating ozone, but rather in a low temperature, a low humidity, and motion. So far as fresh air itself is concerned, there seems to be nothing more mysterious about it than this.

To what extent ought fresh air to be used as a therapeutic agent? Here intelligent experience, and not opinion without experience, is the only guide. That a physician, indeed, should have any article in his creed of therapeutics that is not based on the intelligent experience of somebody is not to be supposed. It can not be denied that where intelligent experience has been applied to the topic of fresh air as a therapeutic agent the use of fresh air has been almost invariably extended. But no one has a right to maintain, therefore, that it is

a panacea. Only when it has been tested in a great variety of pathological conditions—and this can be done with entire safety to the patient—will the therapeutic use and limitations of this physiologically significant agent become known.

FREDERICK S. LEE

COLUMBIA UNIVERSITY

### THE ORIGIN OF THE PRE-COLUMBIAN CIVILIZATION OF AMERICA

IN the whole range of ethnological discussion perhaps no theme has evoked livelier controversies and excited more widespread interest than the problems involved in the mysteries of the wonderful civilization that revealed itself to the astonished Spaniards on their first arrival in America.

During the last century, which can be regarded as covering the whole period of scientific investigation in anthropology, the opinions of those who have devoted attention to such enquiries have undergone the strangest fluctuations. If one delves into the anthropological journals of forty or fifty years ago they will be found to abound in careful studies on the part of many of the leading ethnologists of the time, demonstrating, apparently in a convincing and unquestionable manner, the spread of curious customs or beliefs from the Old World to the New. Then an element of doubt began to creep into the attitude of many ethnologists, which gradually stiffened until it set into the rigid dogma—there is no other term for it—that as the result of "the similarity of the working of the human mind" similar needs and like circumstances will lead various isolated groups of men in a similar phase of culture independently one of the other to invent similar arts and crafts, and to evolve identical beliefs. The modern generation of ethnologists has thoughtlessly seized hold of this creed and used it as a soporific drug against the need for mental exertion. For



Connecticut, as determined by their monthly wages for piece work, over a period of four years. He found that the annual course of production was as follows: Low at the beginning of the calendar year, it fell still lower and reached its minimum at about the end of January; through the spring there was a gradual increase in output until June; then a moderate decrease until the end of July; in the autumn an increase to the maximum in November; and then the winter descent to the succeeding January minimum. Production was thus greatest in the spring and the autumn, and least in the winter and the summer. A very similar course was followed by the workers engaged in making electrical apparatus in Pittsburgh; and similar confirmation of the validity of the conclusions, with changes in details, was made by the output of other industrial workers in the southern states and by strength-tests of school children in Denmark. All these data combine to demonstrate that the greatest physical efficiency of the individual is found not during the summer or the winter, but at intermediate seasons. That the same is true also of mental activity is shown by a study of the marks secured by the students at West Point and Annapolis in certain classes, especially mathematics. Of the various climatic features of the different seasons that might be responsible for these seasonal differences in achievement, temperature appears to be the most important. Both physical and mental activity seem to be greatest and most effective, not when extreme summer's heat or extreme winter's cold prevails, but when the body is subjected to an intermediate temperature. After a careful consideration of his many figures Huntington came to the conclusion that the optimum temperature of the outside air for the physical work of human beings is about 60° F. (15.6° C.) and for the mental work about

40° F. (4.4° C.) the greatest total efficiency of the human body culminating at the intermediate point of 50° F. (10° C.).

We have thus seen that the body reacts to changes in atmospheric conditions in manifold ways. The most potent of the atmospheric agencies is undoubtedly temperature, but high temperatures exert greater effects when they are accompanied by high humidity. I have said little of the movement of air, but it should be understood that movement is an important agency, and its share in the physiological phenomena has been studied by the New York Commission. By way of general summary it may be said that when an existing external temperature is fairly comfortable to the individual an elevation of it, especially when such elevation is accompanied by an increase of humidity, is deleterious, and the deleterious effects are more pronounced when the air is stagnant. Deleterious effects resulting from such a combination of atmospheric conditions may be in some degree obviated if the air next the skin be put into motion, but a more effective antidote is a reduction in the temperature of the air, and this may be assisted by a reduction in its humidity. All experimentation and observation go to demonstrate that a moderately cool and moderately dry air in motion constitutes the most physiologically helpful aerial envelope of the body. The customary figure of 70° F. (approximately 21° C.) for the atmosphere in which most persons engage in the ordinary occupations of the living room of a dwelling is too high; a range from 65° to 68° F. (approximately 18°–20° C.) with not over 50 per cent. relative humidity, is undoubtedly better, but even such temperatures are too high when much physical activity occurs. Depending on activity and on more obscure corporeal conditions the same external temperature may feel at one time warm and at

when any cultural resemblance is discovered there is no incentive on the part of those whose faculties have been so lulled to sleep to seek for an explanation: all that is necessary is to murmur the incantation and bow the knee to a fetish certainly no less puerile and unsatisfying than that of an African negro. It does not seem to occur to most modern ethnologists that the whole teaching of history is fatal to the idea of inventions being made independently. Originality is one of the rarest manifestations of human faculty. For many centuries countless millions of men must have witnessed the effects of steam before the simple and obvious inference was made and it was put to a mechanical use; but if, not knowing the history of the invention of the steam engine, we were to adopt the stereotyped ethnological doctrines of the present day the wide geographical distribution of the steam-engine should be regarded as a most striking illustration of the "similarity of the working of the human mind." Nor does it appear to have struck the orthodox ethnologist that his so-called "psychological" explanation and the meaningless phrase "similarity of the working of the human mind" run counter to all the teaching of modern psychology. For it is the outstanding feature of human instincts that they are extremely generalized and vaguely defined, and not of the precise and highly-specialized character which modern ethnological speculation attributes to them. Nor again is the case strengthened by the misuse of the word "evolution," for the independent development of such an artificial confection as civilization postulates the existence of factors utterly alien to the biologist's conception of evolution.

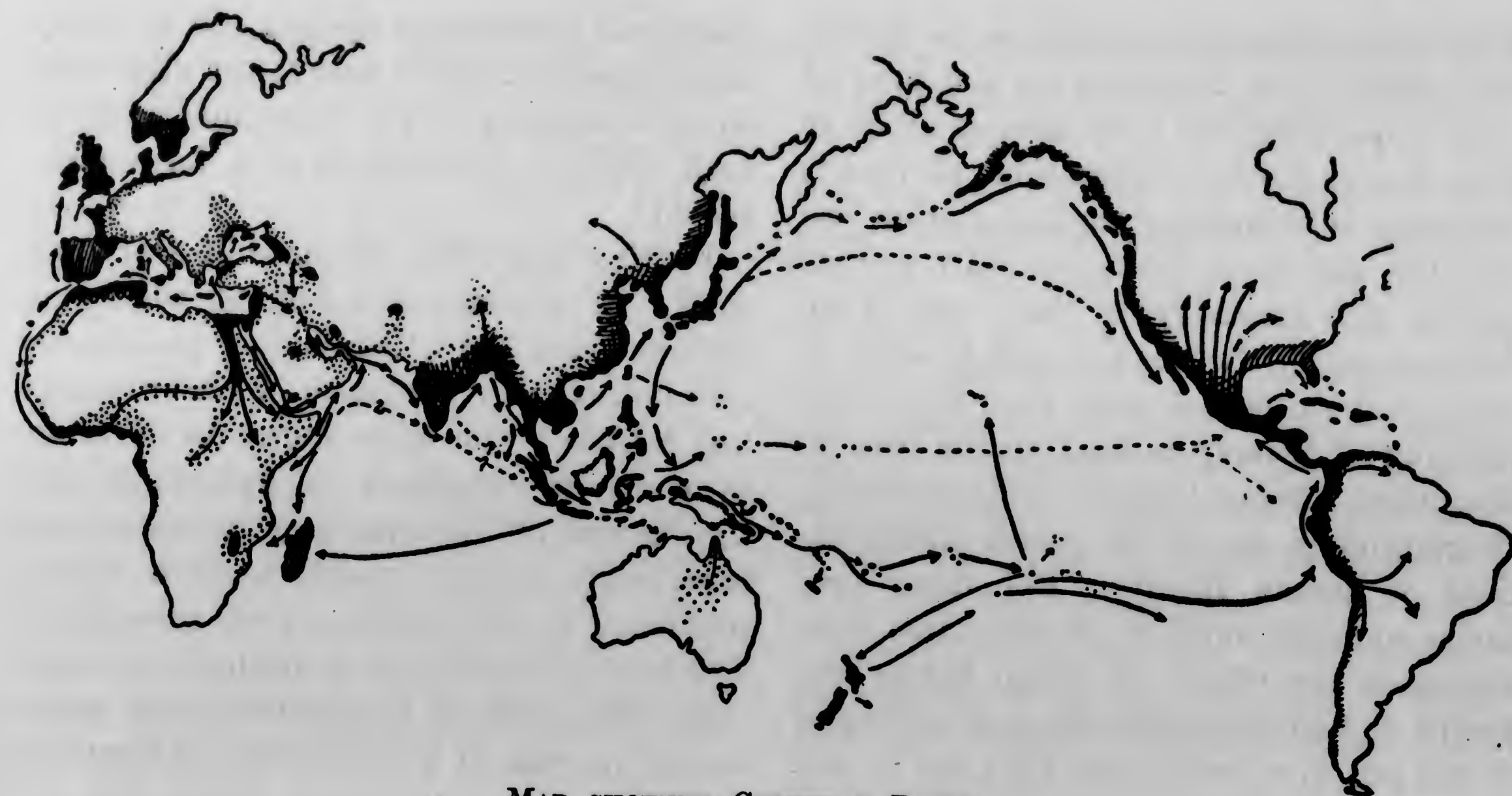
Why then, it will be asked, in the face of the overwhelming mass of definite and well-authenticated evidence clearly pointing to the sources in the Old World from which

American civilization sprung, do so many ethnologists refuse to accept the clear and obvious meaning of the facts and resort to such childish subterfuges as I have mentioned?

Putting aside the influence of Darwin's work, the misunderstanding of which, as Huxley remarked, "led shallow persons to talk nonsense in the name of anthropological science," the main factor in blinding so many investigators to appreciate the significance of the data they themselves so laboriously collect results from a defect incidental to the nature of their researches. The intensive study of a localized area reveals difficulties in explaining every stage in the process of transmission of customs from one spot to another, which the investigator is apt to magnify into insuperable obstacles against the view that the practises or beliefs in question did spread. The failure to recognize the fact, recently demonstrated so convincingly by Dr. Rivers, that useful arts are often lost is another, and perhaps the chief, difficulty that has stood in the way of an adequate appreciation of the history of the spread of civilization.

Bearing these considerations in mind and turning to the positive evidence that establishes the reality of the migrations of culture-bearing peoples, it will be found that there is now available a vast mass of precise and unquestionable testimony in substantiation of the conclusion that the curiously distinctive culture-complex which was gradually built up in Egypt between the years B.C. 4,000 and B.C. 900 began to be widely diffused, at some time after the latter date, west, south and east, and that the latter (the easterly migration), with many additions and modifications which it received on the way (in the Soudan, East Africa, and Arabia; in the eastern Mediterranean, Phœnicia, Armenia and Babylonia;





MAP SHOWING CULTURAL ROUTES

in India, Ceylon, Burma and the Malay Peninsula; in Indonesia and China; and finally in Polynesia) ultimately reached the Pacific coast of the Americas and leavened the aboriginal population of the vast continent with the ferment of the ancient civilizations of the Old World.

During the thirty centuries from B.C. 4,000 onwards there was built up slowly in Egypt, partly as the result of a natural and logical development, but also in part by the accidental addition of many foreign elements, a cultural fabric of a peculiarly complex and artificial texture, the pattern of which is so distinctive that it can be identified wherever and under whatsoever circumstances it occurs.

A people who in B.C. 4,000 were already acquainted with the art of weaving linen, and who practised the curious rite of circumcision, a few centuries later learned to appreciate the usefulness of metals and invented the elements of the metallurgical arts and crafts. It was the merest chance that this particular group of people should have been led by force of circumstances to have been impelled to mummify their dead.

But intimately interwoven with the development of the art of embalming and casually related to it was the making of rock-cut tombs and the building of stone superstructures, the possibility of the making of which was suggested by the use of metal tools. The use of linen was also closely related to these developments. Thus the accidental association of a series of naturally disparate factors became welded about B.C. 3,000 into the nucleus of a peculiar culture of which mummification, the making of rock-cut tombs and a great variety of megalithic monuments, the use of copper and gold and the weaving of linen, and the practise of the rite of circumcision, were some of the outstanding features.

In connection with the ritual associated with mummification statues of the deceased were made and a crop of curious beliefs and rites developed. Thus originated the belief in the indwelling of human beings in stones, and the possibility of petrifying men and animals, the rites of incense-burning and offering libations, and a whole series of other bizarre practises and beliefs, which later became so widespread as in

some measure to seem to justify the prevalent conviction that they were independent expressions of a common human instinct.

It was the merest chance that the people amongst whom this remarkable culture-complex was gradually being built up should have been sun-worshipers, and that the particular group amongst whom the royal family of Egypt originated regarded the Horus-hawk as the symbol of their royalty. It was no less fortuitous that the seat of the capital after the first unification of Egypt should have been in a place (Buto) where the uræus-serpent was venerated. Thus there is the clearest evidence that the complex symbolism of the Sun-god—the sun's disc, the serpent and the hawk's wings—is purely a chance association which was established in Egypt. The intimate connection of sun-worship and its peculiar symbolism with megalithic monuments, with mummification, and with the conception of the king as the son of the god are equally fortuitous associations.

It was no less a chance that this distinctive culture-complex was built up amongst an agricultural people who by force of circumstances were expert in a peculiar method of irrigation.

In the times of the New Empire (from B.C. 1,600 onward) a great variety of accidental accretions were made to this complicated type of civilization which for long centuries had been growing up in Egypt. Such practises as piercing the ears, and a remarkable series of new tricks in the embalmer's technique, are examples of the innovations, some of which are so definite as to enable us to state that the type of Egyptian culture-complex which was distributed so widely in the world could not have started on its wanderings before B.C. 900 at the earliest. It was probably at least a century later before the great migration left the African shores.

It reached the Persian Gulf by various routes. The fact that it passed up the Nile, through Nubia and the Soudan, thence by East Africa and the Arabian coast, is proved by a large series of Ethiopian accretions to and modifications of Egyptian practises when they appear in India and farther east. There are historical reasons for believing that a good deal of intercourse took place via the Red Sea and the Arabian littoral.

The transmission of a number of Mediterranean customs, such as the use of pearls, *Purpura* and conch-shell trumpets, and certain peculiar modifications of embalming indicate the influence of the Levant. The use of the Swastika-symbol, the peculiarly distinctive Black Sea type of dolmen, and the Armenian custom of skull deformation, are further tokens of the part taken by western Asia in adding to and modifying the purely Egyptian contributions to the strange cargoes these ancient mariners carried to India. There are also manifold witnesses of the influence of Babylonia, not only in modifying the Egyptian architectural ideas of the wanderers, but also in contributing new ideas and beliefs. An example is the greater definiteness assumed by the story of the creation, the deluge, the destruction of the sons of men by petrification, and the perpetuation of the chosen race by incestuous unions.

This cultural stream from the Persian Gulf to the Indian coast probably began at the end of the eighth century B.C. and persisted for many centuries; and the Pre-Aryan population of India became thoroughly leavened with its potent influence. Ceylon and further India, Burma and the Malay Archipelago, in turn were brought within the sphere of its activities, probably as early as the sixth and fifth centuries B.C.

From Indonesia the whole eastern Asiatic littoral and all the neighboring islands were



stirred by the new ideas; and civilizations bearing the distinctive marks of the culture-complex which I have traced from Egypt sprang up in Cochin-China, China, Corea, Japan and eventually in all the islands of the Pacific and the western coast of America. The proof of the reality of this great migration of culture is provided not merely by the identical geographical distribution of a very extensive series of curiously distinctive, and often utterly bizarre, customs and beliefs, the precise dates and circumstances of the origin of which are known in their parent countries; but the fact that these strange ingredients are compounded in a definite and highly complex manner to form an artificial cultural structure, which no theory of independent evolution can possibly explain, because chance played so large a part in building it up in its original home.

For instance, it is quite conceivable (though I believe utterly opposed to the evidence at our disposal) that different people might, independently the one of the other, have invented the practises of mummification, building megalithic monuments, circumcision, tattooing and terraced irrigation; evolved the stories of the petrification of human beings, the strange adventures of the dead in the underworld, and the divine origin of kings; and adopted sun-worship.

But why should the people of America and Egypt who built megalithic monuments build them in accordance with very definite plans compounded of Egyptian, Babylonian, Indian and East Asiatic models? And why should the same people who did so also have their wives' chins tattooed, their sons circumcised, their dead mummified? Or why should it be the same people who worshiped the sun and adopted the curiously artificial winged-sun-and-serpent symbolism, who practised terraced irrigation in precisely the same way, who made

idols and held similar beliefs regarding them, who had identical stories of the wanderings of the dead in the underworld?

If any theory of evolution of customs and beliefs is adequate to explain the independent origin of each item in the extensive repertoire, either of the New Empire Egyptian or the Pre-Columbian American civilization (which I deny), it is utterly inconceivable that the fortuitous combination of hundreds of utterly incongruous and fantastic elements could possibly have happened twice. It is idle to deny the completeness of the demonstration which the existence of such a civilization in America supplies of the fact that it was derived from the late New Empire Egyptian civilization, modified by Ethiopian, Mediterranean, West Asiatic, Indian, Indonesian, East Asiatic and Polynesian influences.

The complete overthrow of all the objections of a general nature to the recognition of the facts has already been explained. There is nothing to hinder one, therefore, from accepting the obvious significance of the evidence.

Moreover, every link in this chain of connections is admitted by investigators of localized areas along the great migration route, even by those who most strenuously deny the more extensive migrations of culture.

The connections of the New Empire Egypt with the Soudan and with Syria and its relations with Babylonia; the intercourse between the latter and India in the eighth and seventh centuries B.C.; the migrations of culture from India to Indonesia and to the farthest limits of Polynesia—all these are well authenticated and generally admitted.

All that I claim, then, is that the influence of Egypt was handed on from place to place; that the links which all ethnologists recognize as genuine bonds of union can

with equal certainty be joined up into a cultural chain uniting Egypt to America.

In almost every one of the focal points along this great migration route the folklore of to-day has preserved legends of the culture-heroes who introduced some one or other of the elements of this peculiarly distinctive civilization.

Those familiar with the literature of ethnology must be acquainted with hundreds of scraps of corroborative evidence testifying to the reality of the spread postulated. For I have mentioned only a small part of the extraordinary cargo of bizarre practises and beliefs with which these ancient mariners (carrying of course their characteristic ideas of naval construction and craftsmanship) set out from the African coast more than twenty-five centuries ago on the great expedition which eventually led their successors some centuries later to the New World.

At every spot where they touched and tarried, whether on the coasts of Asia, the islands of the Pacific or on the continent of America, the new culture took root and flourished in its own distinctive manner, as it was subjected to the influence of the aborigines or to that of later comers of other ideas and traditions; and each place became a fresh focus from which the new knowledge continued to radiate for long ages after the primary inoculation.

The first great cultural wave (or the series of waves of which it was composed) continued to flow for several centuries. It must have begun some time after B.C. 900, because the initial equipment of the great wanderers included practises which were not invented in Egypt until that time. The last of the series of ripples in the great wave set out from India just after the practise of cremation made its appearance there, for at the end of the series the custom of inciner-

ating the dead made its appearance in Indonesia, Polynesia, Mexico and elsewhere.

In asking you to publish this crude sketch of views which I have set forth in greater detail elsewhere<sup>1</sup> I wish especially to appeal to that band of American ethnologists, whose devoted labors in rescuing the information concerning the ethnography of their country have called forth the admiration of all anthropologists, seriously to reconsider the significance of the data they are amassing.

G. ELLIOT SMITH

### THE PRODUCTION OF TUNGSTEN

THE tungsten production of the United States during the first six months of 1916 exceeded the production of this or any other country in any previous twelve months. Prices were even more phenomenal than production and reached more than ten times their ordinary level. The output was equivalent to about 3,290 short tons of concentrates carrying 60 per cent. WO<sub>3</sub>, valued at \$9,113,000, according to an estimate made by Frank L. Hess, of the United States Geological Survey, Department of the Interior. Statistics are valuable only so far as their accuracy is known, and this estimate is believed to be correct within 10 per cent. and to be under rather than over the true figures.

These figures are no less noteworthy when it is known that in 1915 much the larger part of the production was in the second half of the year, so that the total domestic output for the twelve months ending June 30, 1916, probably amounted to about 5,000 tons.

Colorado has regained its lead in the production of tungsten ores and, between January 1 and June 30, marketed 1,505 tons, valued at \$3,638,000, of which the Boulder field furnished 1,494 tons. California sold 984 tons, valued at \$3,005,000. The reason for the higher value of the California ore was that it

<sup>1</sup> "The Significance of the Geographical Distribution of the Practise of Mummification," now being published in the *Memoirs of the Literary and Philosophical Society of Manchester*.



### HENRY CHAPMAN/MERCER

DR. HENRY CHAPMAN MERCER, an archeologist and ethnologist of international reputation, died at Doylestown, Pennsylvania, on Sunday, March 9. Many generous bequests of scientific interest were made in his will. The famous Mercer Museum, erected and maintained by Dr. Mercer for the Bucks County Historical Society, has been bequeathed to that society and endowed with a maintenance fund of \$130,000. The Mercer Museum contains a historical collection, which is internationally famous, of some twenty thousand ethnological tools and implements of the pioneer settlers of America. Fonthill, Dr. Mercer's incomparable home, is bequeathed to the public for a museum, and the beautiful grounds surrounding it are given to the Doylestown Nature Club as an arboretum, both bequests to be maintained by an endowment fund of \$100,000. Another \$100,000 bequest is made in memory of his uncle, Timothy Bigelow Lawrence, to Rudolf P. Hommell, Lehigh University, who now is conducting an expedition in the Far East for the collection of utensils employed in the daily life of the inhabitants.

Dr. Mercer was never married. He was born in Doylestown, Pennsylvania, on June 24, 1856. In 1879 he was graduated from Harvard with the degree of A.B. Dr. Mercer received the honorary degree of doctor of science from Franklin and Marshall College in recognition of his archeological discoveries during his Yucatan expedition. He was granted the honorary degree of doctor of law by Lehigh University. Principal among several honors bestowed on Dr. Mercer was the award of a bronze medal by the Exposition Historico-Americano Madrid in 1892 for his "Lenape Stone."

In 1882 he was an honorary member of the United States Archeology Commission at Madrid. He became editor for anthropology in the *American Naturalist*. In 1894 he was appointed by Dr. William Pepper as curator of American and prehistoric archeology at the University of Pennsylvania and filled that position until 1897.

Dr. Mercer had contributed numerous learned papers to historical publications and published many books. Among his books are "Hill Caves of Yucatan" (1896), "Antiquity of Man in the Delaware Valley and Eastern United States" (1897) and "Ancient Carpenters' Tools" (1929).

Fonthill, which was built by Dr. Mercer in 1908 and 1909, is a unique residence entirely of concrete with beautifully groined and arched ceilings, upon the interior of which Dr. Mercer lavished his finest exhibitions of ceramic art, illustrating history and historical subjects, both ancient and modern.

Dr. Charles Conrad Abbott wrote the following ode to Dr. Mercer:

Reincarnation of the storied past,  
Skyward, in majesty, thy walls arise,  
In strength assuring us that they shall last;  
Not crumble as the common structure dies.  
Thy towers, mantled with the morning light,  
Proudly acclaim the past is still alive  
Where proud, grim feature, or the sorry sight,  
Would have the world in soulless fashion thrive.

All honor then to him who raised the pile;  
Where daydreams wander through each classic room;  
Where honest speech is never brought to trial,  
Nor trustful candor hear its certain doom.

Defying critics, faithfully thou wrought—  
Thou master builder of a fruitful thought.

ALBERT MOYER

NEW YORK CITY

Science, pp. 498-499,  
May 16, 1930



can be presented in such form as to interest the more thoughtful and enlightened class of people. Needless to say, the aim of popular articles should be educational and should contain no suggestion of propaganda. Under certain conditions more can be done by personal contact than by writing. We should welcome every opportunity to explain our work to those who exhibit an interest in it. Above all, we should let it be known that we have definite objectives, and as far as possible point out what the attainment of these objectives will accomplish. It thus becomes the duty of research not only to discover new facts but also to disseminate and impress them upon the public conscience, for it is only when the public understands the value of research that it will be accorded the place it should occupy in our national life.

G. A. PEARSON

SOUTHWESTERN FOREST EXPERIMENT  
STATION,  
U. S. FOREST SERVICE

## A SUGGESTION FOR ABSTRACTS OF ANTHROPOLOGICAL LITERATURE

THE informing idea of abstracts is that, as cut-shorts, they indicate the important knowledge printed in a specific article about a certain subject. By their perusal the reader may quickly know whether or not he desires to read the original article. An abstract is simply a short, impersonal analysis of a longer printed original. It does not criticize or comment.

Abstracts are of two main kinds: One is the so-called *author's abstract*; the other may be called the *collaborator's abstract*.

The author's abstract is prepared by the author. It may have two designations—depending on whether it appears with the article abstracted, or appears separately. The former is a “preliminary abstract”—being a short digest of the longer article which immediately follows it in the same volume. When the author's abstract appears separately it may be designated a “lifted abstract”—which, elsewhere, was a preliminary abstract but which has now been lifted from the place of its first printing and appears unaccompanied by the article of which it is the abstract.

The second of the main kinds of abstracts, the collaborator's abstract, is prepared by a collaborator and not by the author. It is unaccompanied by the original article. In other words, the collaborator's abstract is never a preliminary abstract; it is more nearly akin to the lifted abstract.

Both the author's abstracts and the collaborator's abstracts may have been, and probably ought to have been, under the blue pencil of an expert editor, but

the work of the editor as such does not give name to the abstract.

### NEED FOR ABSTRACTS

The need for abstracting the literature in a scientific field is inevitable at a certain advanced stage in the increasing amount of the published data in that field. No one who teaches a full-time schedule can read all he desires to read, or ought to read, in any live scientific field to-day. His available time is insufficient. All of us habitually lay aside for vacation reading certain excellent articles or books which come to our libraries in the busiest periods of the university year.

If we agree that this is the condition in anthropology, what is to be done in an attempt to meet the situation? We must note, in passing, that we are not going to publish fewer articles in anthropology, simply because constantly we are publishing more—as all other growing sciences are doing. There are two reasonable answers to our question: *One*, we can, of course, read our customary amount and “forget” the increasing amount which, like the waters, will go over us if we sit still. This, as we grow old, all of us may increasingly do; but it is an extremely difficult thing for a vital American thus to sit still and let the waters go over him. *Two*, we can get some one else to read for us much of the increasing volume of printed matter.

A few of the most productive American scholars have possessed private funds, or other sources equally as rare to American university professors, which have enabled them for years at a time to multiply, as it were, their brains, pens and typewriters, and they have thus been able to accumulate for personal use a vast fund of information. Thus a secretary and a staff of readers read virtually everything, excerpting or abstracting those parts which it is believed their employer desires. This glimpses the plutocratic stage of abstracting, possible for only a few men.

### PRESENT STATUS OF ABSTRACTING IN UNITED STATES

To-day the democratic stage of abstracting has dawned in a few fields for the use of all workers in those subjects. I quote the advertisement of a new abstract service to show how democratic and how inexpensive this service is in the field of sociology:

The new abstract service offered by the American Sociological Society will provide subscribers with galley proof of the 100 abstracts each issue, 600 a year appearing in the *American Journal of Sociology*, of articles from the leading social-science periodicals in English, French, German, Italian, Scandinavian, and Spanish.

This service is to cost each subscribing member of the society one dollar per year. The following, ac-







probably be of this type—preceding instruction in preparation of a better type. Thus 40 per cent. of the data in the original article is unknown to the reader who has access to only the partial abstract.

The third type is the *complete abstract*. It carries 100 per cent. of the data or entities of the original article. The complete abstract prepared to meet definite standards occupies between 4 per cent. and 5 per cent. of the space of the original article—as scientific articles are now commonly printed. However, a complete abstract does away entirely with the need of a summary at the close of the original article. So, if articles are written with the certainty that they are to be abstracted, they no longer need to carry summaries. Therefore, the printing of a complete preliminary abstract, in addition to the original article, minus its usual summary, need add very little, if any, to the space required for printing the original article with its customary summary.

The standard Dr. Schramm sets for complete abstracts is that every entity appearing in the original article will appear, in its proper sequence, in the complete abstract, and that it will appear in at least one complete sentence; frequently it will have more than one sentence. Some one has urged that only new data should appear in the abstract, but this is not enough. Each entity in the original, whether or not new, must appear in the abstract, if it is to be complete.

Further, the standard, scientific complete abstract thus will carry every entity that should go into the index. In other words, the indexer may, and would, prepare his index entries directly from the abstract by the process, as it were, of abstracting the abstract. Thus, the index entries will show the very quintessence of the original article without consumption by the indexer of the much longer time consumed in digesting the longer original article.

#### ADVANTAGES TO THE INDIVIDUAL OF COMPLETE ABSTRACTS

(1) They greatly add to our equipment of scientific knowledge by giving us a digest of many more articles than we can possibly read in the longer original.

(2) They save us much time which is now more or less wasted in reading original articles of no great importance to us, but whose titles suggest contents of real value to us.

(3) They save us considerable money, by cutting down our subscription list of those periodicals about which we debate at each time of annual subscription.

(4) They save us library space in book shelves, and filing cabinets for periodicals, separates and fugitive articles.

(5) They probably will assist most of us in tending to develop a technique, even habits, of more logical analysis in our writings, and greater clearness in our presentations. On the certainty that we or collaborators must abstract the article, more logic will almost necessarily go into its preparation.

(6) They will save greatly in editorial work in the preparation of index entries for the volumes composed of the several current periodicals with abstracted articles.

ALBERT ERNEST JENKS,  
Chairman, Division of  
Anthropology and Psychology

THE NATIONAL RESEARCH COUNCIL

### SCIENTIFIC EVENTS

#### RESEARCH BUREAU OF METALLURGY AT THE CARNEGIE INSTITUTE OF TECHNOLOGY

As a further step in the plan to expand its scientific research facilities, announcement is made by the Carnegie Institute of Technology in Pittsburgh of the establishment of a special Research Bureau of Metallurgy to begin its work the first of September, 1924. The object of the new department is to apply to metallurgical questions the recent discoveries in the field of physics and chemistry. The organizing of this new bureau is the second important development concerning metallurgical research that has been reported during the year at the Pittsburgh institution. The first step, as was previously announced, was the adoption of a definite program of investigations in metallurgy to be made by the department of metallurgy at the institute in cooperation with the U. S. Bureau of Mines. Several college graduates have already been appointed to fellowships by the institute authorities to carry out the program of research problems, the investigators to have the financial aid and assistance of an advisory board of metallurgical engineers and steel manufacturers of Pittsburgh in addition to the cooperation of the Bureau of Mines. The new research bureau of metallurgy just organized will be a department established separately from the research investigations carried out by the department of metallurgical and mining engineering in cooperation with the Bureau of Mines. Dr. Francis M. Walters, Jr., has been appointed director and Dr. Vsevolod N. Krivobok has been appointed as an assistant. The appointment of another assistant, a specialist in X-ray work, will be made during the summer months.

As director of the bureau, Dr. Walters will also have the title of professor of experimental physics.



tional to the altitude. Hence, to this same crude approximation,  $G$  is also constant through the given range of levels.

Now the actual temperature distributions in the atmosphere at different latitudes are essentially as assumed in the two adjacent columns. Hence the horizontal gradient and therefore the mass-flow,  $\rho v$ , must be roughly constant between the given limiting levels; or, as usually stated, the velocity of the wind inversely proportional to its density.

W. T. HUMPHREYS

(To be continued)

### SCIENTIFIC EVENTS

#### MEMORIAL TO LEWIS HENRY MORGAN

TEMPORARILY displayed in Memorial Hall, at the American Museum of Natural History, New York, is a bronze tablet commemorating the one hundredth anniversary of the birth of Lewis Henry Morgan, called the father of American anthropology. The tablet embodies an Iroquois Indian decorative motif and a wampum record of the founding of the "Iroquois League." After being exhibited at the American Museum, the tablet will be sent to Wells College, where it will be permanently installed.

Morgan was born in Aurora, New York, in 1818, and died in 1881 at Rochester. He graduated from Union College in 1840, and was admitted to the New York bar in 1842. In 1855, his interest in certain rich iron deposits led him to make practical explorations into northern Michigan, at that time a wilderness. Here he became interested in the habits and labors of the beaver, and after several years of observation and study wrote his "American Beaver and His Works," which is still considered the most authentic book of its kind.

Early in his life, Mr. Morgan had become a member of a secret society known as the Gordian Knot. This society was accustomed to meet on the ground of the ancient confederacy of the "five nations," holding its council fires at night on the former lands of the Mohawks, Oneidas, Onondages, Cayugas

and Senecas. Gradually its members developed a curiosity about the history, institutions and government of the Indians, and began to gather together odd scraps of information about them. Mr. Morgan's interest became so strong that he devoted himself to serious study of the subject. He wrote a number of papers which were read before the New York Historical Society and elsewhere, and some of which were published in book form in 1851 under the title of "The League of the Iroquois," in which the social organization and government of the confederacy were thoroughly explained, the first scientific account of an Indian tribe. He later wrote a number of books and papers on Indian life, and gathered together a library containing many important works on American ethnology. For the purpose of studying the Six Nations, he organized the Grand Order of the Iroquois. He was assisted in his researches by the Smithsonian Institution and the United States Government.

The tablet at the American Museum was designed by Mr. Gohl, of Auburn. In addition to the symbolic decorations and various facts about Mr. Morgan's life and works inscribed on the tablet, is the following quotation from his "Ancient Society": "Democracy in Government, Brotherhood in Society, Equality in Rights and Privileges and Universal Education foreshadow the Next Higher Plane of Society to Which Experience, Intelligence and Knowledge are Steadily Tending. It will be a Revival in a Higher Form of the Liberty, Equality and Fraternity of the Ancient Gentles."

#### THE BRITISH DYE INDUSTRY<sup>1</sup>

THE works and appliances of the German firms remain substantially undiminished in extent and unimpaired as to organization, while they still possess a large body of expert chemists and engineers fully acquainted with the details of the business, though doubtless there have been serious losses in the course of the war. It is, however, satisfactory to learn from the address of Lord Armaghdale,

<sup>1</sup> From *Nature*.



July 1921RUDOLF VIRCHOW—ANTHROPOLOGIST AND  
ARCHEOLOGIST<sup>1</sup>By Professor ARTHUR E. R. BOAK  
UNIVERSITY OF MICHIGAN

RUDOLF LUDWIG KARL VIRCHOW was born in the little Pomeranian town of Schivelbein, on October 13, 1821. He died on September 5, 1902. His parents were people in moderate circumstances, his father combining the occupation of a farmer with that of a retail merchant. The young Virchow received his early education at the parochial school of Schivelbein, with special instruction from the local clergymen. He then entered the gymnasium at Köslin, from which he graduated in 1838 at the age of seventeen.

At the gymnasium he followed the regular classical program of studies, but showed at the same time great enthusiasm for the natural sciences, history and geography. He acquired and retained throughout life a remarkable accuracy in both Greek and Latin, and in his later years upon several occasions mercilessly criticized the barbarisms which the younger generation attempted to introduce into medical terminology. This same attention to accuracy of details characterized Virchow's work in every field, and gave him the perfectly astounding mass of information which rendered him such a deadly critic of unstable hypotheses. In addition to the study of the classics, Virchow found time at the gymnasium to read widely in the French and German classics. Italian and English he acquired later. It is interesting to have his reflections upon suitable courses of study for the gymnasium, expressed in an address delivered when rector of the University of Berlin. He maintained that, as a preparation for scientific work, a course in mathematics, philosophy and the natural sciences would have equal value with a classical course, but that the latter could not be replaced by the modern languages.

From the gymnasium at Köslin, Virchow proceeded to the Royal Medico-Surgical Friedrich Wilhelm's Institute at Berlin. Here he qualified for the doctorate in 1843. In connection with his inaugural dissertation, Virchow defended, among other theses, two which he afterwards looked upon as showing the early ripeness of his intellect and the breadth of his interests. The first of these ran *nisi qui liberali-*

<sup>1</sup>A paper read at a meeting of the Research Club, University of Michigan, April 20, 1921, in commemoration of the centennials of Hermann von Helmholtz and Rudolph Virchow.



he was the joint editor, and from 1893 to 1901 the sole editor, of Canstatt's *Jahresbericht über die Leistungen und Fortschritte in der gesamten Medizin*. From 1850 to 1862, Virchow shared with Kölliker, Scherer and Scanzoni the editorship of the *Verhandlungen der physikalisch-medicinischen Gesellschaft in Würzburg*.

A list of Virchow's pupils would include most of the makers of medicine of the last fifty years. Scattered throughout the civilized world, they have from time to time brought together in *Festschriften* and memorial celebrations lists of names and collections of original contributions of which their old master may well have been proud. The *Festschrift* for his seventy-first birthday contributed by his former, and then acting, assistants in the Berlin Pathological Institute includes in its table of contents the names of v. Rechlinghausen, Klebs, Salkowski, Orth, Grawitz and Langerhans, among others, all of whom have had a great influence on the development of pathology and modern medicine. American medicine owes much to those who were under Virchow's tutelage in the last three decades of the nineteenth century.

Virchow was wrong. The cell is not the ultimate unit of life, but the methods of cellular pathology have grown no less important since he gave his great work to the world. The cell with its microscopically demonstrable content is still the morphological unit of life. Disease processes are still interpreted in the light of the cellular changes.

To Virchow we owe our conception of disease. Disease is not an entity, entering the body from without. Disease is life, life which deviates from the normal. The casual factor may reside within or may come from without in the form of trauma, infection, intoxication, or what not, but the cause is not the disease. The disease is the abnormal life of the body cells. The methods of modern medicine are therefore broadly biologic, and along this road of promise Rudolf Virchow pointed the way.

*bus rebus favent veram medicinae indolem non cognoscunt* (Those who do not encourage progress do not grasp the true nature of medicine); the second was an application of Agassiz's then recently published glacial theory to Pomerania *Pomeraniae petrificata glacie primordiali disiecta*. To Virchow there might fittingly be applied the saying, *homo sum, et nihil humanum mihi alienum puto*. His ability to connect science with life as a whole and his interest in everything pertaining to life led him from the investigation of the dead to that of the living man, from craniology to ethnology and to the history of civilization, as well as from the laboratory into the political arena.

In full conformity with this attitude towards life was Virchow's report upon the typhus epidemic in Silesia, published in 1848. Here he showed that the source of the epidemic was to be found in the backward social and political conditions of Silesia, and made radical suggestions for their amelioration. The championship of the people which he thus assumed he maintained throughout a long political career, as a member of the Prussian House of Representatives, from 1862 to 1878; of the Reichstag, from 1880 to 1893; and of the municipal council of Berlin for 42 years. He was a founder of the progressive party (*Fortschrittspartei*), and a firm opponent of Bismarck's imperialism, being honored by the latter with a challenge to a duel. He fought unceasingly for the improvement of the education as well as the social conditions of the masses, and the term *Kulturkampf* was an outgrowth of his political manifestoes. But, at the close of his life, it was Virchow's boast that, although he had devoted himself to both politics and medicine, he had always succeeded in preserving for science its independence of political influences.

While a professor at the University of Würzburg (1849-56), Virchow published two studies on cretinism in Lower Franconia and pathological skull forms (1851-2). These may be taken to mark the beginning of his anthropological work, and were the first of more than one thousand publications in this and allied fields. They were followed (1857) by his "Investigations on the Development of the Base of the Skull in Healthy and Diseased Conditions, and on the Influence of the same upon Skull Form, Facial Structure and Brain Formation." In this treatise he laid the foundation for an anatomical treatment of craniology, pointing out as the problem for investigation the relationship between the shape of the skull, the facial structure and the formation of the brain. His conclusion was that all typical variations in facial structure rest chiefly upon differences in the formation of the base of the skull.

For about a decade following his return to Berlin in 1856, Virchow's main interest and activity lay in the field of medicine. Then he began to turn his attention in an ever increasing degree to anthropological and allied studies, upon which he entered with all the enthusiasm of a true



pioneer. In 1869, mainly through his efforts, was organized the Deutsche Anthropologische Gesellschaft. In the same year he founded the Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte, and its organ the *Zeitschrift für Ethnologie*. In addition to directing the publication of the *Zeitschrift*, he was also an editor of the *Correspondenzblatt* of the Anthropologische Gesellschaft and, from 1870, of the *Archiv für Anthropologie*. The degree to which these new fields absorbed Virchow's activities may be gathered from the fact that, although it was as a pathologist that he was elected to the Royal Academy of Sciences at Berlin in 1874, only three of his numerous papers read before the academy dealt with problems of pathology, while nearly all the rest discussed anthropological subjects.

Passing from the study of the diseased to that of the normal skull, in 1874 Virchow presented the results of his attempts to find ethnographic skull characteristics in an article entitled "On Some Characteristics of the Skulls of the Lower Races of Man." Here he advanced the generally accepted view that the frontal projection of the squamous portion of the temporal bone is a pithecoïdal characteristic, much more frequent among non-Aryan than Aryan peoples; and that the unproved, but certainly to be suspected, defective formation of the temporal brain parts as a result of this frontal projection permits us to see in the latter, and in the bare narrowing of the temporal area, a mark of lower, but not necessarily of the lowest, races.

Virchow's next efforts were directed towards the determination of the skull types of European races. Here the prevailing view was that of Retzius: that each of the great racial divisions had a single type of skull and that peoples must be differentiated as either dolichocephalic or brachycephalic. Virchow took a more cautious attitude and opposed the selection of type skulls "until the whole breadth of individual varieties was known." He also combatted Nilson's theory that an original brachycephalic European population had been overrun by a dolichocephalic element which stood upon a higher plane of physical and mental development, *i. e.*, the Celts and the Germans.

In 1875, Virchow declared it impossible to establish definite craniological types for Germans, Celts, Slavs, Finns or Italians; that the postulate of originally pure and homogeneous great culture races is erroneous, and that all these have been formed by a mixture of smaller elements, a view which now receives general acceptance. Then, in the following year, in his "Contributions to the Physical Anthropology of the Germans," he claimed that even greater weight should be laid upon the height of the skull than upon its length or breadth, and he was able to show that the old German cranial type, as represented by the Frisians, were chamaeprosopic and mesocephalic rather than dolichocephalic as had been maintained heretofore.

The scope of Virchow's anthropological studies widened until he sought to give an exact descriptive basis for the natural history of man. Hence he directed his investigations toward living peoples, as well as toward those which are now extinct, and entered upon the field of ethnology. One great result of his efforts was the census of the school children of the German Empire, taken from the point of view of racial physical characteristics. This census brought out the fact that the historic characteristics of the old Germanic type—blond hair, white skin and blue eyes—were to be found united in only approximately one third of the population of Prussia and one fifth of that of Barvaria. Perhaps in this connection one should mention Virchow's establishment in 1888 of the Museum for German National Costumes and Products of Household Industry, at Berlin.

Carrying his investigations outside of Germany, Virchow compiled anthropological analyses of the Lapps, Eskimos, Patagonians, Terra del Fuegians, Kaffirs, Australians and Malays. One of his most interesting studies was that of the population of Ceylon, in which he established the nanocephalism and racial purity of the Veddas, as well as their relationship to the older Dravidian or pre-Dravidian population of India, while showing that the Cingalese, on the contrary, were a mixed race.

Virchow continued his craniological studies with unabated zeal until the time of his death, when his collection comprised some 4,000 skulls, ancient and modern, coming from all quarters of the globe. Yet he had to acknowledge his inability to attain a satisfactory craniological differentiation of races, or an explanation of how various skull types arise among the same people. He gave great attention to the development of more exact methods of craniological measurements, and helped to bring about the adoption of standard systems in this field. Another beneficial result of his work in this field was the exclusion of pathological forms from the list of skull types. Here it may be mentioned that he maintained that the celebrated Neanderthal skull exhibited pathological characteristics, and consequently protested against the acceptance of a distinct racial type upon the evidence of this single specimen. But in this he failed to win the support of the majority of anthropologists.

In addition to studies upon Illyrian, Trojan, Cyprian, Moroccan, East African, Ancient and Modern Greek, and Philippine skull types, Virchow published a work on American racial skulls—*Crania Ethnica Americana*—noteworthy both for its descriptive details and for its differentiation of pathological deformities of the skull from artificial deformities resulting from accident or intent. His examination of the remains of the Java ape-man—*Pithecanthropus erectus* Dubois—led him to the conclusion that it did not belong to the genus *homo*, but was a gibbon of an extinct species, a view which now finds little acceptance.



It was inevitable that Virchow should be attracted by the basic problems of anthropology and biology, such as the origin of species and the place of man in the natural world. And it was natural that his point of view in these questions should depend upon his belief in the identity of physiological and pathological processes. His formula was: Individual and type equal pathology and physiology. Towards the Darwinian theory of evolution he was by no means hostile, but exhibited the same cautious attitude as in other anthropological questions. He held that there was a great gap in our knowledge, namely, in regard to the development of the human from the lower forms of life. For the time this gap may certainly be filled by an hypothesis, for only by hypotheses can the path of research in unknown fields be marked out. Such a hypothesis, Virchow felt, Darwin had supplied in the finest sense of the word. "It was an immeasurable advance," he declared, "which living Nature made when the first man developed from an animal, whether that was an ape or other creature, which was the racial ancestor of the ape as well. However, the actual proof of the descent of man from the ape has not yet been made. None of the known apes supplies the transitional stage." Still the theory of the descent of man was for him, "not only a logical, but also a moral postulate," whose value lies not in being a new dogma, but a light for further research.

His attitude came to light clearly in his famous controversy with Haeckel, in 1887, when the latter demanded that his monistic doctrine be introduced into the schools. Virchow objected strenuously to the teaching of the problems as though they were the conquests of science, taking the ground that this was contrary to the conscience of the natural scientist, who reckons only with facts. He likewise protested vigorously against any form of compulsion of conscience.

In approaching the problem of the origin of species, Virchow saw more hope of attaining a solution through physiology and pathology than through morphology, which gives only the possibility and not the proof of evolution. "He who teaches us," he wrote, "to develop a Schimmelpilz out of a Spaltpilz will have accomplished more than all the heralds of the geneological tree of man."

In his "Rassenbildung und Erblichkeit" (1896), he developed his doctrine of the pathological nature of variations from type. Originally each species, or variation from type, is produced by a permanent disturbance of the parental organism, and is in this sense pathological. Only by inheritance in the descendants does this condition become physiological: but, up to now, it is completely unknown why one disturbance is inherited, another not. Races, too, are only hereditary species, which rest upon a pathological disturbance in the parental organism. Probably in most cases the disturbance is produced by the environment, but often also by causes contained within the organism, which become effective only after birth.

Virchow's general interest in historical questions and his special anthropological studies led him into the field of prehistoric archeology. To this study, in Germany, he did a great service by raising it from dilettantism to a recognized position among the social sciences. He was early attracted by the history of his birthplace, Schivelbein, and, in 1866, wrote on its antiquities. From 1867 onwards, he became a regular participant in the international congresses for prehistoric archeology and anthropology. In 1869, he began his investigations of North German pile dwellings. A careful study of ceramics enabled him to determine that these pile dwellings were of later origin than the corresponding structures in South Germany, and, on the basis of similar evidence, he showed that the so-called Wendish cemeteries were really pre-Slavic in origin.

Becoming interested in the question of the mutual influences of prehistoric cultures, Virchow made an exhaustive study of the ancient amber and flint traffic routes in Central Europe. It was largely as a result of a friendship formed in 1875 with the Homeric enthusiast Schliemann that Virchow extended his archeological studies beyond the limits of his native country. In 1879 he accompanied Schliemann to the site of ancient Troy, in 1881 to the Caucasus, and in 1888 to Egypt, Nubia and the Peloponnesus. It was Virchow's influence that induced Schliemann to entrust his later excavations at Troy to the experienced archeologist Dörpfeld.

Virchow's expedition to the Caucasus was undertaken in the hope of finding there the source of the European bronze age culture, but in his report on the Graveyard of Koban (1883) he decided against the possibility of this theory. One important result of his work in Egypt was that he was the first to adduce positive evidence for a period of neolithic culture in the Nile Valley.

His Caucasian studies led Virchow to encourage others to interest themselves in the origins of the civilization of the Near East, and through the work of his pupils the civilization of the ancient kingdom of Colchis was revealed. Shortly before his death, Virchow had assumed the honorary direction of a new German Society for the Investigation of Asia Minor, especially Anatolia and Cappadocia.

In these closely related fields of anthropology, ethnology and prehistoric archeology, Virchow's fame rests not so much upon the infallibility of his own conclusions as upon his introduction of scientific methods of investigation, his establishment of organizations for co-operative effort in research, his logical and independent thinking and his deep sense of truth. A great worker himself, he stimulated the work of others, not only in his own country, but also abroad, and so became, in the best sense of the word, an international figure.



Boats, Rafts, etc.



## Boats of the Monterey and Santa Barbara Indians

La Perouse, writing in 1786, tells us that the canoes of the Monterey Indians are "made of reed," while the Indians of Santa Barbara and San Diego "have canoes built of wood".--

Voyage of La Perouse, Vol. 1, p.218 (text and footnote)

London, 1798.



*Twice we crashed our way around windfalls*



*Field & Stream - July 1933.*



B O A T S

SERI INDIANS, Tiburon Island

W J McGee: 17th Ann.Rept.Bur.Eth.for 1895-96:

pp.215-221, illus. 1898.



Canoes: "Hollowed out of the cedar  
by fire, and smoothed off with stone axes".

Quoted from Lewis + Clark, Journals to the  
Source of the Missouri River. London  
4° 433 - 435. 1814

Franchier 246

Wilkes



## CANOES HOLLOWED OUT WITH FIRE

"But the greater number  
are very weak. To save them from hard  
labour, we have adopted the Indian method  
of burning out the canoes."--Lewis &  
Clark <sup>Journals</sup> [quoting from Gass, p. 207],  
Vol. 3, ft. note p. 91, Sept. 30, 1805.

"Hollowed out of the cedar by fire,  
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Lewis & Clark's Trav., pp. 433-5.  
(Quoted in Native Races, Vol. 1, ft. note  
p. 238)

Wilkes Hist. Oregon, p. 107.



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ft. note, p. 238)



## CANOES HOLLOWED OUT WITH FIRE

Swan, James G., The Northwest Coast;  
or Three Years Residence in  
Washington Territory, 1857

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Ibid, The Indians of Caper Flattery. ?  
(Smithsonian Contribution to  
Knowledge, XVI (No. 220), 108 pp.)

Ibid, Haidah Indians of Queen Charlottes  
Islands, B.C. (Smithsonian Contri-  
bution to Knowledge, 21) 1876



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## CANOES HOLLOWED OUT BY BURNING

Roland Dixon, in an article on the "Achomawi and Atsugewi" Indians of northeastern California, says concerning their canoes:

"There was comparatively little opportunity for the Indians of this region to make use of canoes. They made them, however, burning and digging them out of yellow-pine or cedar logs. They are said to have been rather square-ended, and ranged up to 25 feet in length. Both poles and paddles were used to propel them. Rafts of tule were also employed."

Roland Dixon, Notes on Achomawi & Atsugewi Indians of Northern California, Am. Anthropologist, Vol. 10, No. 2, p. 214, April-June 1908.



## BOATS HOLLOWED OUT BY BURNING

William Wallace Tooker, in discussing the Massawomeke people of unknown habitation, who at times visited Virginia in their canoes, quotes Capt. Henry Spelman as follows: "Beinge in the cuntry of the Patomecke the peopel of Masomeck weare brought thether in Canoes which is a kind of Boate they haue made in the forme of an Hoggs trowgh But sumwhat more hollowed in." Tooker then goes on to say: "It is evident that some of the people called the Massaw-óm-ekes used the bark canoe, while others used the wooden dug-out. This can be observed on the great lakes today. Roger Williams informs us that the Mishoon was a boat made of a pine, oak, or chestnut tree hollowed out by burning and scraping."

William Wallace Tooker, The Algonquian Terms  
Patawomeke and Massawomeke, Am. Anthropologist, Vol. 7,  
No. 2, pp. 184, 184-185, April 1894.



James W. Weeks, an English sailor who deserted his ship at San Francisco in 1831 and lived in California for the remainder of his life, in Reminiscences given to the Bancroft Library, speaks of the rushboats which the Indians of the San Francisco Bay region used.--

in 1831

"Some Indians came over to Read's Ranch [Sausalito] 57 with their rush boats that I have already mentioned. It was three bundles of bullrushes tied in separate bundles and those bundles was lashed together with a long cord, when he came over he unlashd his valce, that is what they call them [balsa or valsa is the Spanish word for raft], and the Bundles left on shore to dry so as to be in good condition when wanted."

Weeks, James., Reminiscences of a Pioneer of 1831, MS, Bancroft Library, p. 57, 1877



## TULE BOATS

On Nov. 19, 1846 while traveling along the San Joaquin river with a party of Indians, Edwin Bryant states: "The river being too high to ford we constructed, by the aid of the Indians, tule-boats, upon which our baggage was ferried over the stream. The tule-boat consists of bundles of tule firmly bound together with willow withes. When completed, in shape it is not unlike a small keel-boat."

Bryant: What I Saw in California, 359-360, 1848.



Lake Indians "had boats, which, though not of wood, were really canoes, and the old Indian will shake his head and say, 'Old cano mucho wano; log cano no mucho wano.' These old boats were constructed in this wise: A willow pole was taken for a keel and properly shaped, by placing it between stones and weights. Withes of proper length were then taken and fastened to the keel just as the ribs of a boat are, and shaped up and attached to another pole used as the gunwale. Tule was then interwoven between the ribs of the boat and made as compact as possible. It is true that the boat leaked, but what did they care for that? . . . Their boat would never founder at sea nor capsize, for the roughest seas could put no more water in them than there was, and the weight of the occupant kept it well ballasted. These boats were propelled by a paddle. They would have to be rebuilt as to the tule part every year generally, though by careful usage they would last two years. The boat of to-day is the rude dug-out of the pioneer days, and is made with fire as the chief implement. It is easily upset and Indians frequently drown, which is the occasion of the remark quoted above in regard to the relative merits of the two styles of canoes."

--L.L.Palmer, in Hist.of Napa and Lake Counties, Calif.,  
Slocum, Bowen & Co., p.27 (of Lake Co.), 1881.



## B O A T S

PIUTE ?

Leonard, in his Narrative, states that the Piute encountered in Humboldt-Carson Sink, Nev., by Walker's party in 1833, who "call themselves Shoshocoes," float on the lakes "by means of a raft made of rushes, which are very plenty," and spear the fish.

--Adventures of Zenas Leonard, 166, 1904 (repr. from original of 1839).



In an account of the Indians of Santa Clara Valley is a description (after Vancouver) of their boats. Vancouver is said to describe their "canoes" as being "about 10 feet long, 3 or 4 feet wide, and made of rushes and dried grass of a long broad leaf. The materials were made into rolls of the length of the canoe, and in thickness about 2 feet, and tapering to a point at each end; and 2 or 3 of these bundles were lashed firmly together. They were conducted with a long double-bladed paddle, like those used by the Esquimaux. They were so different from the crafts made by the more skilful Indians on the northeastern coast, that they do not deserve the name of canoe or boat, but rather that of raft."

--Frederic Hall(after Vancouver), History of San Jose and surroundings, 40, 1871.

Later the author says "They made their rafts as they did in former times, as described by Vancouver, and sometimes would load them with half a dozen persons, but would seldom attempt to cross the bay with more than 2 or 3 on them."

--Ibid 42-43.



## B O A T S

## MOUTH OF SACRAMENTO RIVER

Duflot de Mofras, 1840-1842, speaking of the island formed at the mouth of the Sacramento and <sup>so-called</sup> Jesus Maria<sup>✓</sup> rivers, east of Carquines, says: "The island is the home of deer and beaver; there are also rattle snakes; the Indians often resort there in their balsas, a kind of raft made of rushes, to hunt the fresh water otter."

--Duflot de Mofras, Exploration du Territoire de l'Oregon, I, 449, 1844. (Free translation.)

✓ "The Rio Jesus Maria does not exist."--Ibid.



## BOATS OF THE VALLEY TRIBES

"None of the valley Indians used canoes or boats made from the trunks of trees , or bark. Instead they employed a kind of raft, pointed at both ends, ten feet long and 3 or 4 wide, made of tules tightly woven together with willow. They were propelled by a double bladed oar, and were buoyant and serviceable. Their fish spears were made of bone. "

Illustrated History of San Joaquin Co. Calif. , p 27, 1890 .



Frederic Hall, in his History of San Jose, speaks of the canoes used by the Indians of Santa Clara Valley, which were described by Captain Vancouver, as follows:

Their canoes were "about 10 feet long, three or four feet wide, and made of rushes and dried grass of a long broad leaf. The materials were made into rolls of the length of the canoe, and in thickness about two feet, and tapering to a point at each end; and two or three of these bundles were lashed firmly together. They were conducted with a long double-bladed paddle, like those used by the Esquimaux. They were so different from the crafts made by the more skillful Indians on the northeastern coast, that they do not deserve the name of canoe or boat, but rather that of raft."

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"Some Indians came over to Read's Ranch [<sup>in 1831</sup>Sausalito] 57 with their rush boats that I have already mentioned. It was three bundles of bullrushes tied in separate bundles and those bundles was lashed together with a long cord, when he came over he unlashed his valce, that is what they call them [balsa or valsa is the Spanish word for raft], and the Bundles left on shore to dry so as to be in good condition when wanted."

Weeks, James., Reminiscences of a Pioneer of 1831, MS, Bancroft Library, p. 57, 1877



# The Making of....

*Are you contemplating building a canoe? This article explains the How and Why of it.*

## A Birch Bark Canoe

By WALLACE KIRKLAND

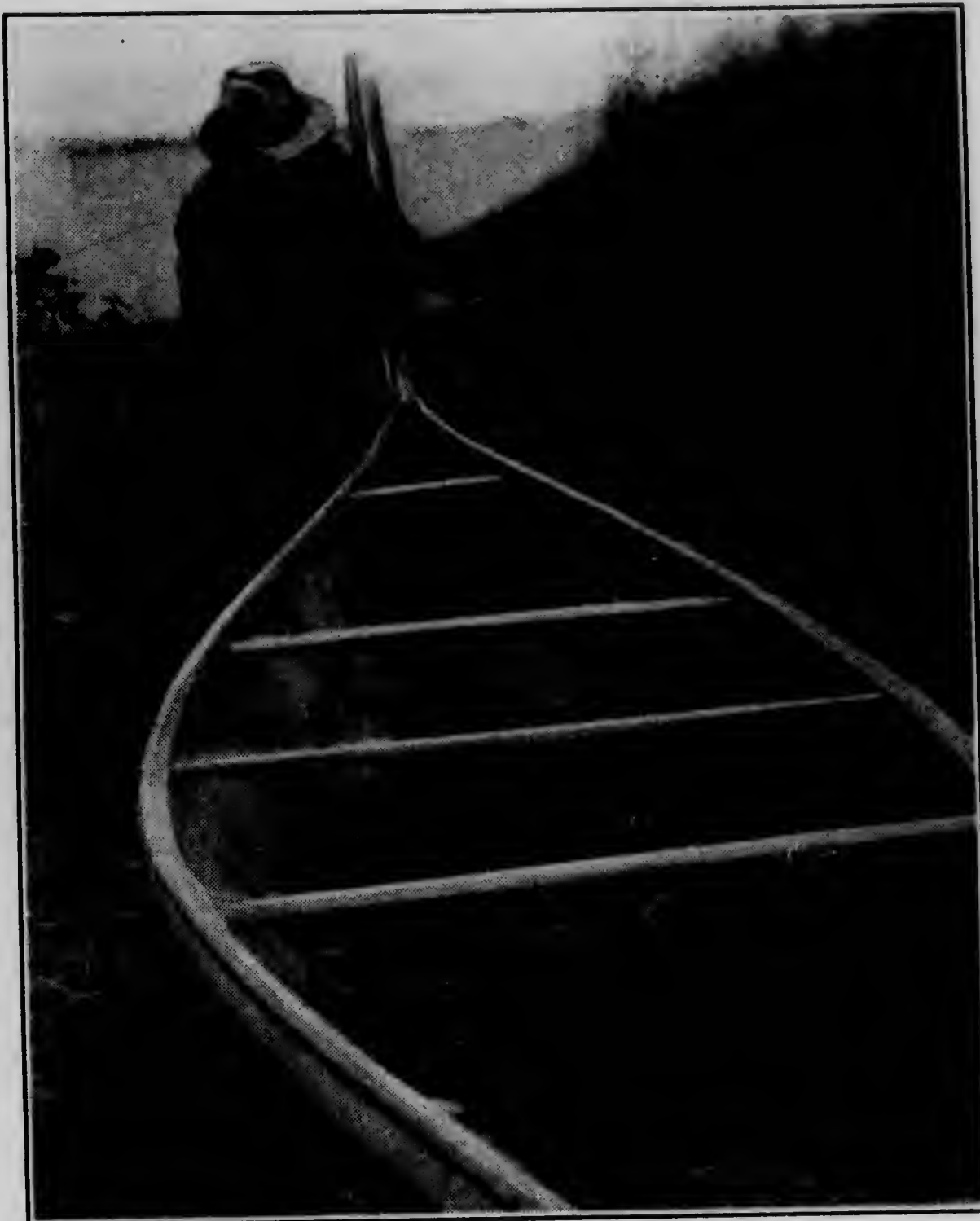
JACK POT's daughter knew her birch bark. There was no question about that. John Push-ka-gan, her husband, could split cedar and whittle ribs for canoes until he sat on a pile of shavings three feet high, without even attracting her attention, but let him so much as handle a piece of birch bark and she was right there. When it came to birch bark she was supreme.

Take, for instance, the argument over the tree which the man had selected for the bottom of the canoe. John thought the bark was all right, Mrs. John thought it wasn't. The Jack Pot standard, she said, demanded that the very best materials be put into every canoe. And the woman won.

But wait. We are getting ahead of our story, so let's start at the beginning.

I first saw John Push-ka-gan at the big pow-wow held to celebrate the gathering of the wild rice crop on Little Otter Tail Lake, in Northern Ontario, Canada. I had been sent to take moving pictures of this unique harvesting process. Thirty-four canoes of Indians had come from the surrounding country for this annual event. One family had travelled by paddle and portage from the Wabigoon reservation, a hundred miles to the north. There were canoes of Manitou Indians, Seine River Indians and Red Gut Indians, all of them belonging to the great Chippewa nation. They were camped in tents, cedar shacks, birch bark tepees and brush lean-tos on the mouth of the Otter Tail River.

Most of the canoes were factory made, canvas covered or plain cedar. A dozen or more, however, were of the primitive birch bark type made for centuries by the Indians. John Push-ka-



Temporary frame

gan had four of these, and I discovered that he had made them himself.

Paddling, as I do, over seven hundred miles each summer, through the wilds of Northern Ontario, I am naturally very much interested in all kinds of canoes.

The canoe was originally designed by the Indians for use in a country where the only avenues for transportation through the dense forests were the innumerable lakes and rivers. These called for a boat which would carry their belongings, their families, their dogs and their supplies safely across lakes miles in extent, down dangerous rapids, between great walls of rock, and up narrow streams, where the water was only a few inches deep. Besides being seaworthy, this boat had to be light enough so that when the end of a lake was reached it could be carried by one man across the portage to the next body of water. And it must

needs be made out of the materials available in the forest.

Nature was very provident. She provided three trees out of which the ingenious Indian could construct such a

boat. The canoe birch gave a tough leather-like bark for the outside; the white cedar, with its long straight-grained wood, could easily be split and bent for the ribs and gunwales; and the spruce tree supplied roots for sewing the birch bark together, and also the resinous gum for making the seams water-tight.

The Indian created the design. And so well did he perfect this that modern canoe makers, though using different materials, have been unable to improve upon the shape. A modern canoe is stronger and more lasting than one made by the Indians, but it is also heavier, and



Peeling the bark



not always as seaworthy. A properly made Indian birch bark canoe will ride waves better than a manufactured one the same size.

The canoes on the beach in front of the Push-ka-gan tepee were well made. They were deep and wide, and the



Splitting floor boards

ends were turned up far enough to prevent the water from splashing in. I began asking questions about their builder. Paddy Morso, an Indian trapper friend of mine, said, "Push-ka-gan, he marry Jack Pot's daughter." This had no significance for me until I learned from another Indian that Jack Pot, still living and very old, had been the most famous canoe maker among the Seine River Indians, and Jack Pot's daughter, marrying Push-ka-gan, accounted for the perfection of his canoes.

I wanted to see a birch bark canoe made, and also to get moving pictures of the different steps, so, with Paddy Morso as interpreter, John Push-ka-gan and I went into conference.

An Indian mind works very slowly, and time means nothing to him. The conference lasted the better part of two days. It was really an endurance contest, the trick being to see which one could sit the longest without speaking. Sometimes an hour went by without a word. Then there would be an exchange of a few mumbled monotonies between the Indians, and again a long silence. Near nightfall of the second day John held up twelve fingers and said, "Me, Seine River. Twelve days." And I knew he had agreed to my request.

The mouth of Seine River was seventy miles away from my cabin. I allowed two days for the trip, but ran afoul of the fall equinoctial gales, and was three days late getting there. Two miles away I saw a white spot against the dark forest and knew it was the Push-ka-gan tepee. John had kept his rendezvous.

The Indian met me on the beach, and as soon as I got my camp set up, a hundred yards away from his, we were

ready for work. The first job was getting the material for the ribs. We paddled four miles to a cedar swamp where there were hundreds of large trees. The right tree had to be large enough, at least fourteen inches in diameter; then the grain must be perfectly straight. This could be told by the texture or the rough outside bark. If the lines of the bark were crooked, it was an indication that the grain of the wood on the inside was also bent. When we found a tree large enough with a straight grain, it also had to be free from knots. After much searching, such a tree was found.

The only tool the Indian had with him was a small cruiser's axe. With this he felled the tree, cut it in sections six feet long, and then, while I watched amazed at the simplicity of his craftsmanship, he split the logs first in halves, then in quarters and finally into thin strips roughly resembling the ribs of a canoe. For this splitting he used six wedges made out of dry cedar three inches in diameter. He used them in pairs, and hammered them in with the back of his axe.

It was after dark when we returned to camp, and next morning at daylight John began fastening the ribs.

With a flat knife, sharpened like the blade of a plane, he drew long shavings of the rough strips, flattened one side, curved the other, and tapered both ends down till the rib balanced. Forty of these were whittled, and the work took two days. They were then tied in bundles, weighted with rocks, and put to soak in the lake.

Another all-day tramp gave us the strips of cedar for the gunwales. It took six pieces in all, each sixteen feet long, perfectly straight and flawless. A fine tree, one hundred and eighty years old, contributed to this part of the canoe.

Next came the birch bark. John announced that he would be ready to start at daylight, and added, "That woman, he go, too." I was up and ready before the sun rose, but neither of the Push-ka-gans came out of their tepee. About nine, John strolled over to my tent, made some observations about the weather, talked about ducks and moose, but not a word about the proposed hunt for birch bark. Finally, I asked point blank if we were going. He said, "That



Canoe drying

woman, he no go. Me no go, too."

Jack Pot's daughter had spoken, and there would be no trip for birch bark that day.

We had had frost that morning, snow was not far away,

and bright sunlight days, for moving picture work, were getting scarce. It was rather trying to spend a glorious sunshiny day just doing nothing. But there was nothing to do, so we did it.

Mrs. Push-ka-gan spent the day washing clothes on a flat rock in front of her tepee.

Next morning, before daylight, the flap of my tent was pulled open and John put his head inside and said, "That woman, he ready."

And ready she was. Waiting on the beach, in her recently laundered best, a home-made paddle in one hand and a small axe in the other, was Jack Pot's daughter, all set to get the birch bark for my canoe.

After a five-mile paddle we left the canoe, and tramping through the woods began sampling birch bark trees. Every one six inches or bigger was examined. Like the cedar, it must first of all be straight, and free from knots. Then the bark must have the right texture. It must bend without splitting, and be thick enough to stand hard wear. It must also peel off smoothly and leave no part of the inside sticking to the tree.

Nearly two hundred birches were examined before noon and only four small ones met all the requirements. Half the day was gone and we had not yet located the most important tree of all, the one which would furnish the wide heavy strip of bark for the bottom of the canoe.

John glanced through his fingers at the sun and said "Tea." I knew it was lunch time without looking at the sun. The early breakfast, and vigorous tramp up rocky hill-sides, over fallen trees, through dense tangled brush had created an uncomfortable appetite. Back we went to the canoe.

I furnished the food, so assumed the responsibility of cook. Our menu called for moose meat, bread, tea, wild rice and raw onions. The Indians had come prepared to drink tea, and each had a cup, but they had not figured on the wild rice.

When Mrs. Push-ka-gan saw me put the water on to boil she disappeared into the woods, and just as the rice was cooked came out with a dish she had made out of birch



John and the finished canoe

bark. She had sewn the ends together with spruce roots. Out of this bowl she and John ate the rice. I loaned the man my fork and his wife used the blade of my hunting knife. The moose meat was broiled on sharpened sticks

over a bed of coals. Push-ka-gan made the tea, and tea it was. Potent enough to have tanned leather.

After lunch the hunt for the birch bark was resumed. Early in the afternoon one eight-inch tree gave up its outer covering, but the big tree still remained unfound.



Fitting the ribs

Along about four o'clock, John spotted a large tree over on a ridge. It seemed to have all the requirements. It was big, it was straight and there were no knots in it. The bark peeled off smoothly as good bark should, but the texture was not quite up to the standard set by Jack Pot, and passed down to his daughter. John was sure the bark was all right; Mrs. John was sure it wasn't. I was getting tired, and thought the bark would do. But I knew nothing about birch bark, so said nothing.

The man and wife sat down to talk things over. They conversed in their quiet, low language. Then John got up, took another sample off the tree, bent it, smelt it, tasted it, felt it, and handed it to his wife. No, it wouldn't do. Jack Pot's daughter had spoken.

The sun had already gone down behind the western rim of trees. The time for taking moving pictures was past. There was a long paddle to camp and supper, but Mrs. Push-ka-gan would not yield.

Finally John, after one more attempt at persuasion, looked longingly at the tree and said, "Tree, maybe, not good," and gave up the battle.

Despairing of finding a tree that day, we started back to the canoe. It meant another day of searching. When almost to the lake the squaw mumbled something and pointed to a clump of spruce and balsam above which the golden brown leaves of a birch tree showed. John went over, and then at a call from him was joined by his wife. There was no question in either of their minds about this tree. It was the one

we had been searching for all day. Quickly it was cut down, a long slit was made through the bark with the point of a knife, then the ticklish job of peeling began. In the spring bark peels easily, but at the approach of winter



it hugs the tree tightly, as though to protect it from the coming cold. Getting the bark off without splitting it was quite a knack. It was first worked loose along the edge of the cut, then a thin pole was passed under the raised edge, and by pressing against the bark with this pole it was slowly peeled off intact.

As soon as the bark was off the tree it was rolled with the inside out, and from then on was always handled in this way. The inside of the bark becomes the outside of the canoe.

Long after dark the fire in front of John's tepee guided us across the last bay back to camp. We had accomplished in a day what usually takes three or four. John said he walked a week once before he got the bark for one of his canoes.

The real building of the canoe began next morning. A flat piece of ground was selected, sand brought up from the beach, and a mould made the shape of the bottom of the canoe. The two strips of cedar for the gunwales were then taken out of the water, where they had been soaking, and bent into the shape of the top of the canoe. They were held in place by the cross pieces, or thwarts, which were fitted in.

Another frame, resembling the upper outline of the canoe, but shorter and narrower, was next made. The strips of bark for the bottom of the canoe were unrolled on the flat sand mould, then the smaller of the two frames was laid on top of the bark and weighted down with large rocks. A pail of boiling water was poured over the bark, and while it was steaming the bark was bent up around the weighted frame, and held in place by a series of poles driven into the sand. The strips of bark for the sides of the canoe were next put in place, and these were sewn to the turned up edges of the bottom piece.

All the sewing was done by Mrs. Push-ka-gan. While John was busy making the frame of the canoe, she had made a trip into the woods and returned with a large bundle of green spruce roots, varying in size from an eighth of an inch to an inch in diameter. These she split in strips the size of rattan used in cane-seated chairs. She then boiled them in a mixture of moose fat and water to make them pliable and strong. For sewing, the end of the root was sharpened and drawn through a hole in the bark made with a sharpened file.

Along the sides of the canoe, where there would be little strain, a single stitch was used, but on the bottom seams a double cross-over stitch assured strength.

The frame of the canoe was then fastened to the top edge of the side bark and the ends turned up and held in place by the bent cedar bow pieces, around which the curved end of the bark was sewn. Then the temporary frame weighted with rocks was lifted out, and the ribs forced in.

These ribs, which had been soaking for a week, were steamed over a bed of coals and bent in pairs around John Push-ka-gan's knee. Each one was then forced down into the canoe, where the spring against the sides held it in place. When the forty ribs were all in, a pair of poles were inserted, and these, spreading against the sides, pushed the ribs out and stretched the bark tightly. They were held in place by blocks of wood, and the canoe was turned upside down on a rack over a long slow fire to dry.

In the meantime John prepared the flooring boards. Another cedar tree was split into thin strips and smoothed with the knife, which in the Indian's hands was as effective as a plane in a carpenter's.

It took most of a day to get the spruce gum. Mrs. Push-ka-gan was in on this, too. She carried a birch bark bowl that held about six quarts, and this we started out to fill.

It was slow work. Miles were tramped, hundreds of spruce trees were searched, most of them yielding nothing, a few of them some little lumps of gum. Two ounces from a tree was considered a good yield. It takes about two years for the sap from the wound on a spruce tree to reach the right consistency for pitching canoes. Why the Push-ka-gans didn't blaze a number of spruce trees in their territory, and have in this way a regular gum supply, was beyond me. With John's slight knowledge of English, and my absolute ignorance of Ojibway, we could only converse on concrete subjects, which were readily illustrated by objects at hand. Such abstract discussion as the supply of spruce gum two years hence was out of our range of conversation.

When we got to camp Mrs. Push-ka-gan melted the gum in a frying pan and removed the bits of bark that had been gathered with it. For the inside seams of the canoe the gum was used in this unmixed state, just heated and applied with a flattened stick. It was the color of maple sugar. For the outside seams the gum was mixed with powdered charcoal, the right mixture being determined by the sense of taste. The woman would add charcoal to the bubbling gum, stir it for a while, then dipping some out, would taste it. More charcoal would be added till the flavor was correct.

After three days of drying, the canoe was taken off the rack, and the ribs were removed. Drying, they retained the shape in which they had been bent. The inside seams were pitched and the floor boards were put in. This was done by a sort of shingling process. Beginning at one end, a layer of the boards were inserted, then the first rib, cut to fit under the gunwales, was forced in. This held the boards firmly against the birch bark. More boards were slipped in and more ribs added till the middle of the canoe was reached. Then the same process was started from the other end.

Though John had spent hours whittling the ribs, he was careless when he fitted them in, battering some up very badly as he forced them into place with a club. One or two broke under his merciless pounding. Once, as he hammered on a very tight rib, there was a crack, and the spruce root stitches of a side seam gave way. Mrs. John wasn't there at the time, so John repaired the damage himself. Evidently his knowledge of sewing was on a par with his knowledge of birch bark, because, when his wife, as she pitched the canoe, discovered his crude handwork, she immediately cut out the man-made stitches and replaced them with her own.

Jack Pot's daughter would tolerate nothing but the very best. At last the canoe was finished. It had been two weeks in the making and a total of one hundred and fifty hours had been spent on its construction. It was now ready for use.

John announced that he had to go to town to get some sugar, tea and tobacco, and he agreed to paddle the canoe down the forty miles of lake to Fort Frances. It would have been difficult for me to tow it down behind my canoe. Crossing a big open stretch, we were caught in a very severe wind squall, and the canoe rode the waves as a well-made canoe should.

At Fort Frances it was crated and shipped, and is now being used on the lower end of Lake Michigan. It causes much comment among the people who see it; modern people who are used to manufactured goods. But it is no novelty to the water and shores of Lake Michigan, because hundreds of years ago, before Chicago, before Marquette, many canoes just like this one were paddled on the lake, and drawn up around birch bark tepees on its sandy shore.



# Bows and Arrows

C. Hart Merriam  
Papers  
BANC MSS  
80/18 c



# Bow & Arrows in Calif.

See Yahi Archery by Saxon T. Cope.

Univ. Calif. Publ. Eth. vol. 13, no. 3. March 6, 1918.

[Cope in Yahua film  
copy]



## BOWS AND ARROWS

See Roland Dixon, Notes on Achomawi  
& Atsugewi Indians of Northern California,  
Am. Anthropologist, Vol. 10, No. 2, p. 213,  
April-June 1908.



PIT RIVER INDIANS

Description of bows and arrows, method  
of making fire, smoking, decorating faces.

Lt. H. L. Abbot, Pacific R. R. Repts.,

pp. 61-2, 63-4, 1857.



## BOWS AND ARROWS

## INDIANS OF SAN CARLOS MISSION, CALIFORNIA

In writing of the Indians of San Carlos Mission, visited by him in Sept. 1786, La Perouse says: "Their arms are the bow and arrow, which is armed with a flint very skilfully wrought. The bows, which are wood and strung with the tendon of an ox, are very superior to those of the inhabitants of Port de Francais."

--Voyage de la Perouse autour du Monde, II, 272, Paris

1797 (4<sup>to</sup>). Translation is from "A voyage round the world," printed by A. Hamilton for G.G. and J. Robinson and others, London, I, 454, 1799, 4<sup>to</sup>, but compared and found to agree with original French.

Same material is on pp. 222-223 of Vol. II of octavo ed. in 3 vols., printed in London in 1798 for J. Johnson. (8<sup>th</sup>)

"If the natives of California poison their arrows, like some other of the American tribes, the substance employed for this purpose must be less speedy in its effect, as well as less dangerous; for the Spaniards, who have resided among them for several years, have seen no instance of wounds occasioned by these arrows proving fatal."

--Ibid: p. 58 of Vol. IV of French ed.; p. 370 of Vol. II of English ed. of 1799; and pp. 219-220 of Vol. III of English ed. of 1798.



BOWS AND ARROWS

IDAHO, SNAKE R. VALLEY

Described in detail.

--N.J.Wyeth, in Schoolcraft, Indian Tribes, I, 212-213, 1851.

Plate facing p.211.



J.D. Borthwick, who spent three years in California 1851-54, says of the Indians in the vicinity of Placerville:

"Their bows and arrows are very good specimens of workmanship. The former are shorter than the bows used in this country [book is published in Great Britain], but resemble them in every other particular, even in the shape of the pieces of horn at the ends. The head of the arrow is of the orthodox cut, the three feathers being placed in the usual position; the point, however, is the most elaborate part. About three inches of the end is of a heavier wood than the rest of the arrow, being very neatly spliced on with thin tendons. The point itself is a piece of flint chipped down into a flat diamond shape, about the size of a diamond on a playing-card; the edges are very sharp, and are notched to receive the tendons with which it is firmly secured to the arrow."

--J.D. Borthwick, Three Years in California, 131, 1857.



## BOWS AND ARROWS

Bows and arrows of Indians on S Fork Eel River briefly described by Gibbs, in Schoolcraft, Indian Tribes, III, 123, 1853.

Bows and arrows of the Klamath and Trinity tribes briefly described by Gibbs, Ibid, 141.

Bows and arrows of Oregon and California Indians described by Emmons, in Ibid, 207. (Plate illustrating Oregon bows and arrows faces p.468.)



In an article on "Indian customs of California," ~~in Schoolcraft V~~, E. M. Kern <sup>(1853)</sup> says: "Their weapons for the war and chase consist of bows and arrows. The bows are formed of a kind of cedar, and covered with the sinews of a horse or elk on the back, making them very elastic and strong. The arrows are chiefly of cane--those used in the chase having a point of hard wood, while for war they are pointed with small heads of flint, beautifully barbed."

--E.M.Kern, in Schoolcraft, Indian Tribes, V, 650, 1855.

In the same volume Schoolcraft speaks of "those delicately-wrought and artistic arrow-heads of obsidian which the Pacific coast tribes of Oregon and California execute. Even the tribes on the Rocky mts., who draw their means of subsistence from the lowest orders of animated nature, exhibit the same skill in the construction of this instrument."

--Schoolcraft, Ibid 114.



Following some Indian material taken from Powers (as this may be also), Harry L. Wells makes the following statement regarding bows and arrows. As he is writing of Nevada Co., he evidently refers to Indians of Sacramento Valley and those of adjacent mountains:

"The valley Indians did not manufacture bows. They had no cedar wood, and had to buy it of the mountaineers. Cedar, when dry, is very brittle, and the bow-maker anointed the wood every day with deer's marrow, to make it tough and flexible. The bow was made from the white, or sap, of the tree, was scraped and carefully polished, so as to bend evenly, after which deers' sinews were split and glued on to the back, until it became convex in form. The glue was made by boiling deer and elk bones. A large bow was about 5 ft. long and very strong, requiring a powerful arm to bend it. The string was made of several strands of sinew, and would bear as much strain as a half-inch rope. Arrows were made of willow, buckeye, or reeds; war-arrows, with flint heads; arrows for game, without heads, and in sections, so that they could be shortened or lengthened, according to distance. Ten days was required to make a first-rate bow, which was valued at \$5; arrows were worth 12½ cents a piece."

--Harry L. Wells, Hist. of Nevada Co., Calif., 25, 1880.



Duflot de Mofras, 1840-1842, in his remarks on the Indians of the Tulare Valley, says:

"Their arms are clubs, spears, and arrows made with care and equipped with sharp flints. Their bows, 'doublees'<sup>a</sup> with the tendons of a stag, and the curve of which is inverted in order to augment the tension, are not more than a metre [1.093 yds.] in length; the cord, made of wild hemp, is garnished with a small piece of fur [or skin?] which deadens the whizzing sound; therefore, one may, in traveling, receive an arrow shot a very great distance, without having heard any noise and without suspecting the hand which has sent it forth."

--Duflot de Mofras, Exploration du Territoire de l'Oregon, II, 377, 1844. (Free translation.)

<sup>a</sup> Note.--Sheathed? strengthened?



## B O W S   A N D   A R R O W S

LOWER CALIF.

Duflot de Mofras, in speaking of the vegetable kingdom of Lower Calif., says: "There must not be forgotten the palo of the arrow, the poisonous juice of which renders the arms of the Indians so terrible."

--Duflot de Mofras, Exploration du Territoire de l'Oregon, I, 242, 1844.



Atsookā'e

Hat Creek, Calif.

Lt. H. L. Abbot, August 2, 1857, describes the bows and arrows of Pit River Indians which he met while following down Hat Creek to Pit River.

Pacific R.R.Repts. VIa, 61-2. 1857.

Poisoned arrows (62).



## BOWS AND ARROWS

PIUTE

June 2, 1860,

After the battle on Truckee R., Nev., <sup>^</sup>avenging the Pyramid Lake slaughter, "McLeod, a man of unusually large proportions, was found lying upon his face, a strip of flesh including the sinew, having been cut from the center of his back its whole length. Of the sinews of their enemies the Indians are said frequently to make bow strings."

--History of Nevada, pub'd by Thompson & West, 162, 1881

(taken from a newspaper account of the battle).



In writing of the Indians of Nevada Co., Calif., whom he calls "Diggers" and "Nevada Indians" but states that they call themselves "Oustomah Midah," E.G. Waite says that "the men made their arrows and a very superior bow, having a covering of sinew along its back, which retained the elasticity of the instrument."

--E.G. Waite, in [Edwin F.] Bean's History and Directory of Nevada Co., Calif., 27, 1867.



## POISONED ARROWS

A.S.Taylor writes in the Calif. Farmer:

"A correspondent of the S.F.Evening Bulletin, writing from Fort Crook, in the Pitt River country, 11th Aug., 1861, details an account of a fight with the Indians of that section (to the Eastward) of which the following is an extract:

. . . . .

It may be of some interest to know with what substance the Indians poison their arrows, and how they do it. The substance is rattlesnake poison, and they make use of it in the following manner: When they kill a deer, antelope, or any other animal of the kind, they fix the liver on the point of a stick, and place it in front of a rattlesnake; then they tease his snakeship until he has bitten the liver several times. The liver is then left in the sun until it is putrid, when the Indians smear their arrows with the putrid mass, and set them in the sun to dry."

A.S.Taylor, Calif. Farmer, Vol. 16, No. 9. Nov. 22, 1861.



## CLAY SLING BALLS

Juan Bojorges (a native Californian, born 1806, who served as soldier for many years in the San Francisco Company) in an account of Arguello's campaign in Sacramento Valley in 1821 [erroneously given as 1824] states of one of the tribes encountered, "with the slings they would hurl balls about the size of an orange, made of clay pierced and kneaded with the skins of animals, and if they hit a man or beast they surely cause death." -- Bojorges, Juan, *Recuerdos sobre la Historia Calif.* pp. 1-3. [Recollections about California History] MS, Bancroft Library. 1877. Translated by S.R. Clemence, April 1917.



# PRIMITIVE BARTER

By KENSETT ROSSITER

NOT LONG ago while crossing a field in Westchester County, New York, I reached down and picked up a beautifully chipped obsidian arrowhead. Obsidian is a volcanic glass and, while there are great ledges of it in the West, none is found further east than the Yellowstone.

There, for countless ages, the aborigines fashioned their weapons and implements, and even in those remote ages there was a system of barter among the primitive tribes which accounts for the few obsidian arrowheads which have been found in the East.

The Indians of New York and New England were severely handicapped by the inferior material along the Atlantic seaboard and inland with which they were obliged to fashion their weapons. I have picked up hundreds of their arrowheads and four out of five were chipped from brittle, white quartz. There is little flint worthy of the name in this entire region. Consequently, when we find arrowheads rudely chipped from slate, quartz and bluestone we realize what an advantage it was for the Indians of New York and New England to receive material brought to them by their red brothers of the West.

Not so far west as the Yellowstone,

but still very remote in prehistoric times, lay the great flint ridge of Ohio. For centuries primitive man quarried much of his raw material from this vast storehouse whose stone is so admirably adapted to making arrowheads, picks, awls, knives, scrapers, hoes and hatchets. This ridge in Licking County is about eight miles in length and varies in width from a few hundred feet to three miles. Here today may be seen the great holes from which this peculiar, pink, flinty stone was quarried.

With their primitive methods one will, no doubt, won-

der how the Indians managed to carry on such extensive operations; but by scraping away the earth and building fires on the surface of the rock, and then dashing cold water over the heated area one learns that this fine-grained rock can be split and shaled off in great chunks. Nearby were workshops where the chunks were again split and roughly fashioned into "turtlebacks," which is the first stage of the arrowhead.

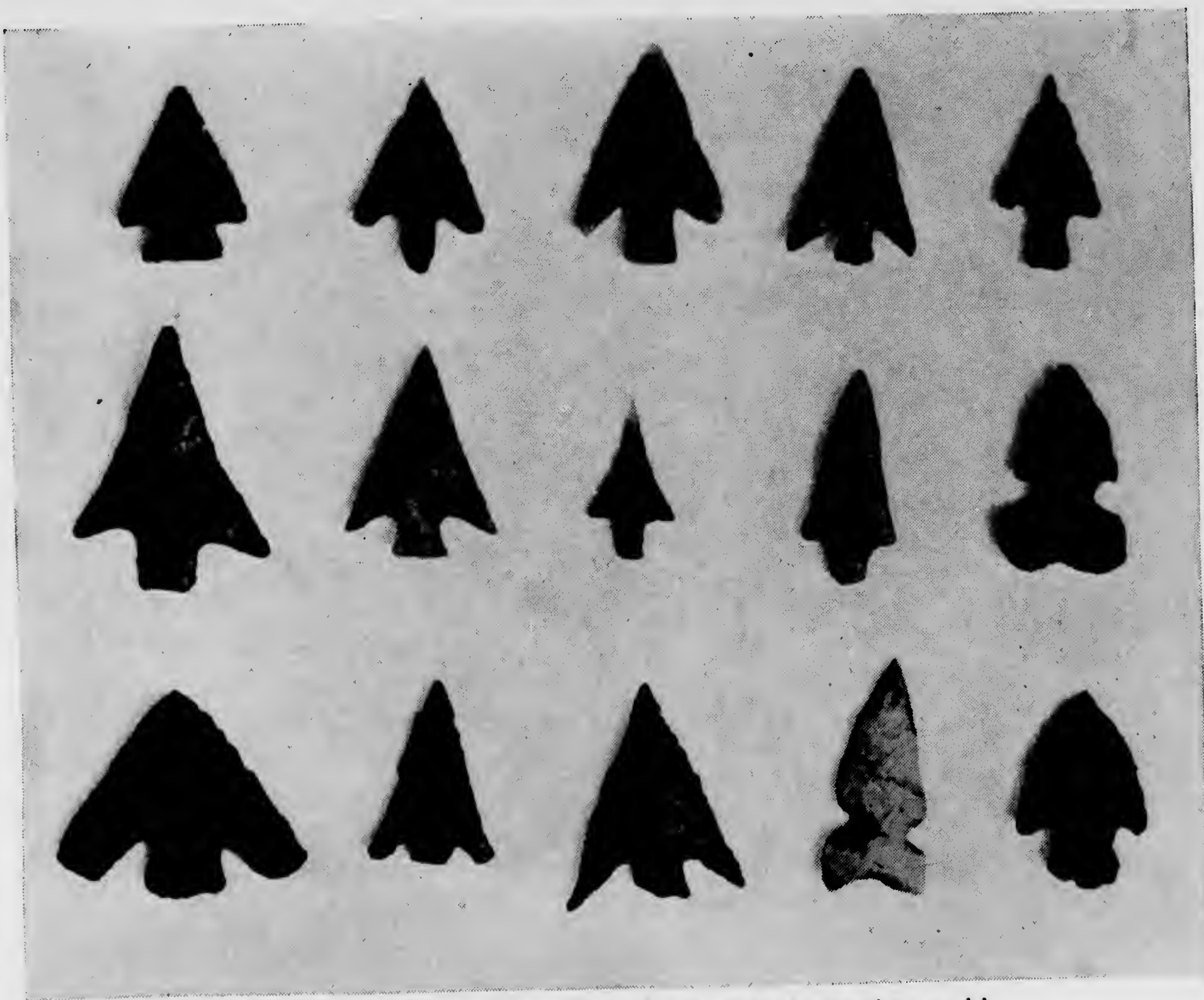
The finished arrowheads were objects of barter and many of them started on their journey to tribes living hundreds of miles from the place where the stone had been quarried. While it is a rare occurrence in New York or New England to find an obsidian arrowhead which has been transported from so great a distance as

the Yellowstone, it is not unusual to find implements which, we know at a glance, came from the famous flint ledge in Ohio.

The most beautifully fashioned arrowheads that have been found in the United States are the so-called "bird-points" from the Willamette Valley, in Oregon. And the reason for this is that the highly skilled lapidary of ancient times worked with semiprecious stone — agate, translucent

blooded quartz, chalcedony, carnelian, jasper and stones holding every color of the rainbow. I have even seen "bird-points" of turquoise and moss agate.

So skilled did these workers become that they were able to chip from the hardest stone effigies of human beings, fish, birds and animals. Some specimens have knife-edges so sharp that it would be a simple matter to cut your finger while handling them; others are so delicately fashioned that their needle-points could be successfully used to pry out a splinter.



The most beautifully fashioned arrowheads in the world  
—"bird-points" from the Willamette Valley in Oregon



# BOWS *and* ARROWS

By DOUGLAS LEECHMAN

THE forest was, to the Indian, an essential of life. Without the game it sheltered, the products it afforded, and the protection it lent him, he could not have survived. It is true that certain groups, such as the Prairie Indians and the Eskimo, made less use of the forest than others, but even they depended on it to some extent. The Prairie Indians made many things of wood, including bows and arrows and their highly valued tipi-poles, tripods and back-rests, while many Eskimos made annual trips inland to the timber line, and fragments of driftwood were carefully treasured by others. Even the dwarf willows of the Arctic were woven into mattresses to keep their sleeping-bags off the snow. Of first importance among the many products of the forest were bows and arrows.

Indian bows varied greatly in effectiveness. Some of the tribes made weapons which were crude in the extreme and which could not be used for hunting at a greater distance than twenty-five yards. Others had a much better type and it was possible for some of the Prairie tribes to send an arrow right through a buffalo if the animal were struck in a suitable spot. Many bones, both human and animal, have been found with stone arrowheads embedded in them.

The Eskimo seems always to carry off the prize where mechanical ability is involved. Many of their bows were highly finished, efficient affairs which were used successfully against polar bears, musk-oxen and caribou. When we consider that the scanty supply of wood often had to be eked out with such unpromising materials as antler, whalebone, musk-ox-horn and bone, we are in a better position to appreciate the Eskimo's triumph over adverse conditions.

Not only has the Eskimo a complex type of bow, but he has a more complete set of accessories than most native archers. The bow itself is carried in a special seal-skin case to which is attached a quiver of the same material holding two or three dozen arrows. To the case is also fastened a small tool bag filled with an assortment of odds

and ends. There will be spare arrowheads, a hank of sinew thread, a second bow-string, an arrow straightener, extra feathers, a small marlinspike for tightening up the sinew lashings on the back of the bow, a little whetstone, a small board for trimming feathers on and half a dozen other implements that may come in handy.

Another accessory that the Eskimo archer makes use of is the bracer, or wrist-guard. This is a small shield of bone, wood, ivory, or sometimes antler, frequently very beautifully decorated, which is worn on the left wrist in such a way as to protect the arm from the bowstring when the arrow is released. A highly-strung bow can inflict quite a painful bruise on the unprotected wrist, especially if used frequently.

FURTHER south where wood was plentiful and of many different kinds, there was great variation in the material used for making both the bow and the arrow-shaft. On the Pacific coast, as far south as California, yew was the wood most generally used. This is the same wood that the famous English archers selected, and even today the best bows are made from yew wood. Cedar was very generally used for arrow-shafts, being light, straight in the grain, and easily worked.

In the east of the continent, in the absence of yew, hardwoods were considered the best material for bows, and ash, second-growth hickory, osage orange (also called bois d'arc), oak and walnut

were used. Many bows were made stronger by a lining of sinew or rawhide on the back; this did not add to the casting powers of the bow but often saved it from breaking when full-drawn. The bow-strings were of sinew in many cases, which made perhaps as satisfactory a string as could have been devised by the natives. In modern practice, linen bow-strings are the rule.

The making of an arrow is really quite a complicated process and was usually accompanied by a good deal of ceremonial procedure, designed to add magically to the efficiency of the finished weapon. The shaft itself was generally of some light, straight-grained wood, or a cane,



An Iroquois Archer



to which might be added a foreshaft of heavier material. To the foreshaft was attached the arrowhead proper, often of stone, but also made of bone, ivory, antler, copper or hardwood.

The feathering was an important part of the arrow-making and one which was not, apparently, very well understood by the Indians. They frequently used only two feathers and, as the late Dr. Saxton Pope, one of the leading authorities, said, "the only good arrows that have two feathers are on weather vanes." Three are necessary to obtain proper rotation and direct flight.

The arrowhead itself has probably attracted more attention, amateur and professional, than any other example of Indian handicraft. Easily recognized, widely distributed and often of great beauty of workmanship, it is easy to understand why this should be the case. For many years people discussed how they were made and some most extraordinary theories were advanced, all of which is somewhat surprising when we know that there was always the possibility of asking any one of some hundreds of Indians to demonstrate the method.

Two shapes of arrowhead were in general use: one, lance-like or conical, for killing game, so made that the arrow might easily be withdrawn from the wound; and the other with barbs, intended to stay

in the wound even when the shaft was pulled out; these latter were used in war or against big game that might travel some distance before falling. Tests have shown that a chipped stone arrowhead has more power of penetrating flesh than has a sharp steel arrowhead of the same weight.



An Eskimo using a compound bow. His seal-skin bow-case and quiver are lying at his feet

There were in addition blunt-headed arrows of wood used for stunning birds and small game; among the Bella Coola Indians of British Columbia a special arrow was made for shooting humming-birds, which had a many-pointed head composed of short twigs radiating in the form of a cone from the tip of the shaft.

Most of the stories that we hear of wonderful marksmanship and skill on the part of Indian archers are exaggerated. With few exceptions, the bows were clumsy and the arrows defective. A bow made by Ishi, a Yahi Indian of California and a very skilful bow-maker, would cast his best flight arrow 205 yards. Dr. Pope's English long-bow, made by himself, cast the same arrow 250 yards. The average for twelve Indian bows tested by Dr. Pope with the same particularly good arrow was 146 yards. Ordinary Indian arrows were not cast nearly so far. At

the time these tests were made, about 1913, the world's record arrow flight was 459 yards, made by Ingo Simon in France with a composite Turkish bow believed to be nearly two hundred years old.

THIS man must surely  
"draw a wicked bow,"  
judging from his  
"stance."

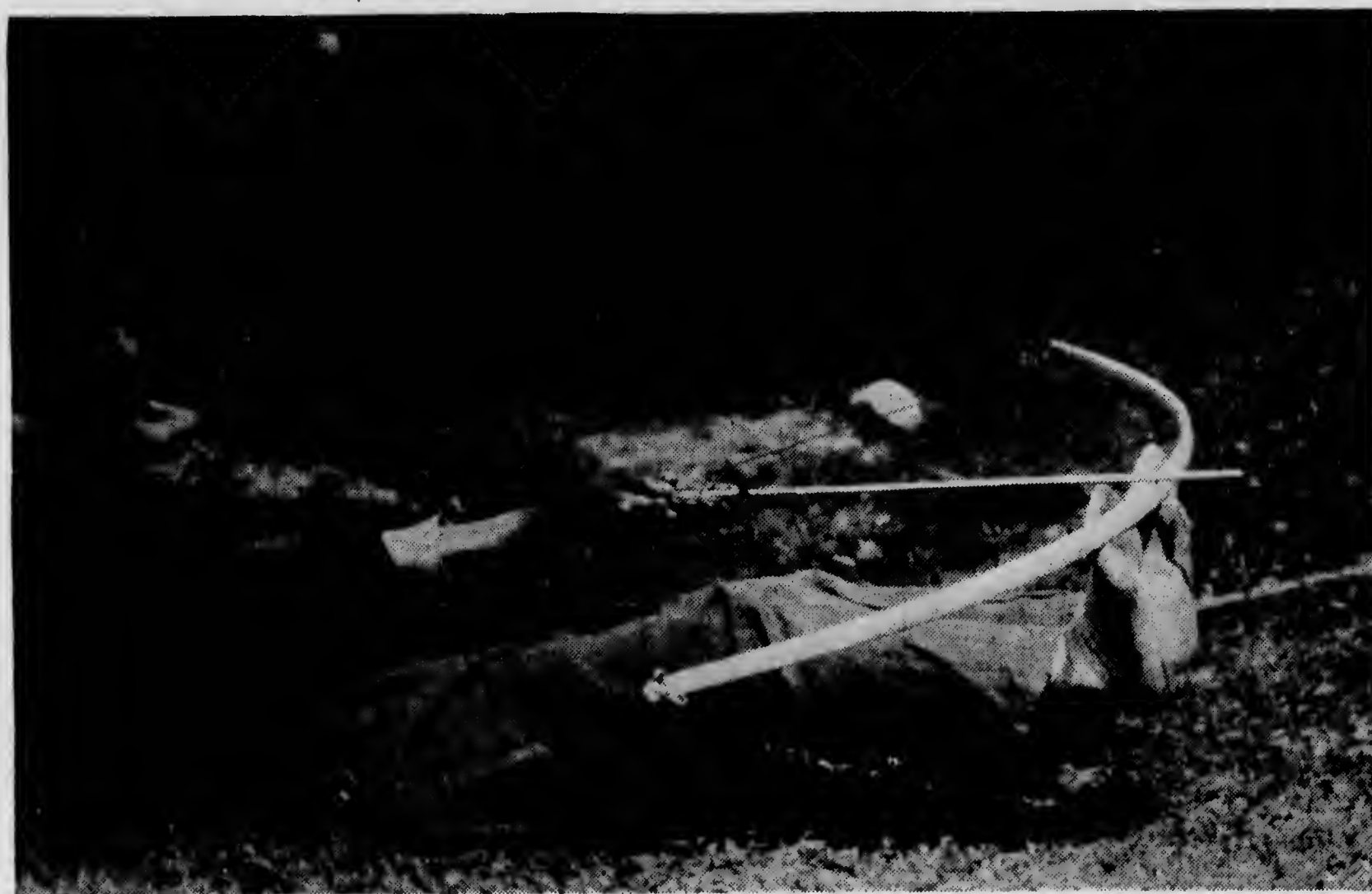
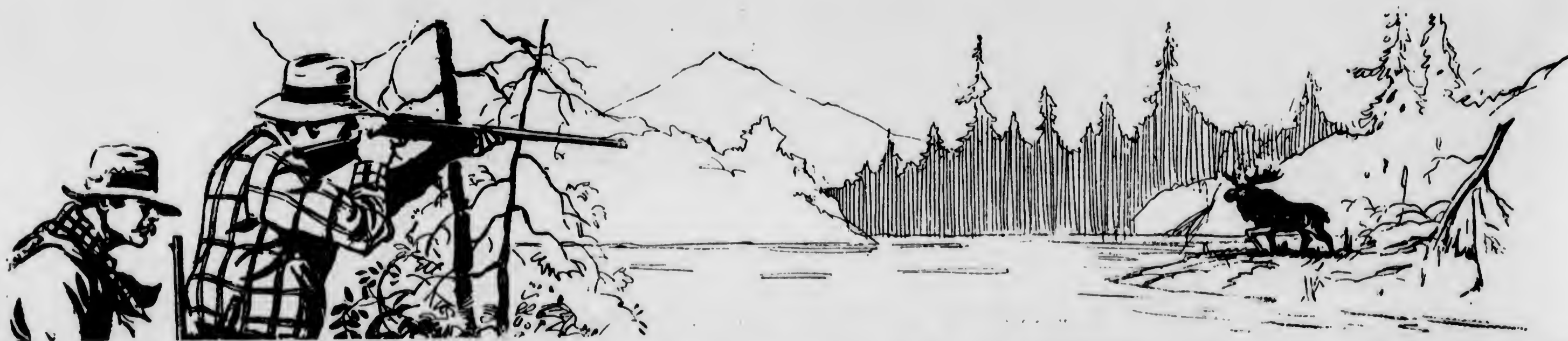


PHOTO shows an Iro-  
quois Indian using  
both arms and legs in  
discharge of weapon.





## Inexpensive Summer Fun Indian Arrow Points Are Interesting to Hunt

(Tenth of a series of 12 articles. Next week—Wild Fruits and Seeds.)



### MANY KINDS OF RELICS

Indians made many things out of stone besides arrow and spear points. Included in the above illustration are a grooved ax, an ungrooved celt, a banner-stone (upper right) and a neck ornament known as a gorget (lower left). Rarest prize of all is the grooved point shown at lower right: a 10,000-year-old Folsom dart point.

INDIAN arrow points have always been favorite objects of collectors. There used to be more of them than there are now—indeed, in pioneer days there were often far too many of them, which their red-skinned owners were much too anxious to bestow upon their undesired new neighbors. But the Indians are gone now, from most of the land; only their relics remain, to be sought for by hopeful collectors, and perhaps found by the lucky ones.

Best way to hunt for arrow points and other things the Indians made is to walk slowly over recently cultivated earth, especially a few hours after a rain, keeping your eyes carefully on the ground. Every time you see a bit of sharp-edged stone projecting, pick it up. Not often will an arrow point be lying loose upon the surface. Much more frequently only an edge or a corner will be sticking out of the soil.

Of course, more than 99 times in a hundred your sharp-edged bit of stone will prove to be just that and nothing more. But once in a while you will be rewarded with the thrill that only a fortunate find can give. Do not despise your treasure if it happens to have a bit knocked off its tip or lacks a corner. You will find dozens of imperfect specimens for every perfect one.

Arrow points are by far the commonest kind of Indian relics you are likely to find. Arrows are shot at game, or loosed in battle, and may thus be lost. Or they may strike the quarry, merely wound it, and be carried away. Only after the animal dies does the decay of its body release the bit of stone to lie in the earth.

Yet by more than ordinary good fortune you may find other things the Indians made: the larger points of darts or spears, the grooved stone head of a

tomahawk, an ungrooved ax-like tool known as a celt, ornaments of various kinds. Rarest prize of all is a "banner stone"—a symmetrically formed, oblong, elliptical, or even butterfly-shaped piece of polished stone with a hole bored through it crosswise. Nobody knows what these pieces were actually used for, but their apparent uselessness as tools or weapons, and the position of the small hole, hint that they were carried on the ends of ceremonial wands or staffs.

Since these Indian weapons and tools are usually made of flint, jasper, or other hard stone, you don't need to take too great precautions with your collection. They may be kept loose in a box or drawer, so long as you don't mix big pieces and little too indiscriminately. That might damage the smaller pieces. Or, if you want to make a more easily examined exhibit, use a piece of wall-board, piercing holes on opposite sides of your arrow spear points and fastening them down securely with fishline or thin copper wire.

However or wherever you may go collecting, *don't dig*. Indian mounds, or other places that are supposed to be Indian graveyards, are always tempting. But they are so rare, and the secrets they hold are so valuable, that only expert scientists should ever stick a spade into them. Stories of treasures of gold and pearls hidden under Indian mounds are invariably false: mounds *never* contain anything you can sell for enough money to pay for the labor of digging. So it's better to let them alone.

For more information about collecting Indian relics and a list of books and pamphlets on the subject, send us a postcard with your name and address. Ask for Bulletin 10. Address Science News Letter, 2101 Constitution Ave., Washington, D. C.

Science News Letter, August 20, 1938

### ART

## Restore Old Paintings— With Science and Taste

IT IS PROPER to restore old paintings—provided this is done with science and taste.

This, in effect, is the verdict of Sir Kenneth Clark, director of Great Britain's National Gallery. He has come out for the policy of restoring old masters, whenever possible, to their original brightness and charm. Many canvases in the National Gallery are emerging from behind seven veils of "protective" varnish. One cleaning job has given England a new Velasquez, for dirt and repaint had hidden a Velasquez portrait of King Philip long rated as a lost work.

Sir Kenneth is well aware that resto-



*Smithsonian Report for 1869, p. 42. 1871.*  
has examined the contents of several mounds and Indian graves, from which he obtained for us many interesting articles, the principal of which are earthenware vases in good preservation and of curious forms, approaching that of the vessels common among the tribes of Chili and Peru, evidently for holding water, most of them having very narrow openings, and being spherical in shape; also, stone hammers, chisels, pestles, carved pipes of sandstone, a disk of quartz, bowls and cups of earthenware, &c.

In Texas, Dr. D. H. McElderry, stationed at Fort Griffin, has assiduously collected from the tribes near his post many objects of interest; among which we may enumerate three Comanche war shields painted and ornamented, bows, bow case, arrows, quiver, scalp knife, and sheath, war drum, tomahawk, and riding whip, all of which belong to a warrior's equipment. The other articles are implements for dressing skins; tinder bag; dance ornaments; two head dresses, one made of Comanche hair and the other of a bear's ear; a girdle and pouch made of a Comanche's skin; a square girdle and arm and head ornaments, some of silver plates, with toy bows and arrows, and two rag dolls decorated with Comanche hair. Dr. J. Middleton, of Camp Verde, has presented a saddle obtained from the Kickapoos, and Mr. George Kean, some bony plates of the *Lepidosteus*, or great western gar, having been used by the southern and western Indians as arrow-heads; a fact in accordance with a statement of William Bartram in his travels in Florida during the last century.

In Florida, explorations have recently been made in the shell heaps near Tampa Bay by Dr. William Stimpson and Mr. E. C. Stearns. From the former we have received a curious shell implement formed of the columella of the great *Fasciolaria gigantea*, the use of which is unknown. From Mr. Stearns, a large soapstone vessel, a stone sinker, a spear-head and fragments of pottery. Mr. H. Clark, of the same place, has presented several hammers, a fishing sinker, a number of arrow-heads, and an earthenware vase.

From Alabama, we have received specimens of arrow-heads, principally of jasper or agate, and of good finish, presented by Mr. Isaac Slee, of Baldwin County, and specimens of the same kind from Mr. Henry C. Force, collected in Northern Alabama, and also specimens of pottery and arrow-heads presented by Dr. Reynolds, United States Army.

From Georgia, at St. Simon's Island, a favorite station of the Southern tribes, Dr. C. H. Taylor, United States Army, has forwarded a number of stone axes and arrow-heads, and also pottery from Brunswick County.



on a terracing demonstration on his farm and built three terraces. Now he wants the rest of his farm terraced.

"Alfalfa, sweet clover, and soy beans are his principle legumes. Grapes, blackberries, apples peaches, and cherries are all grown on his farm."—Indian Leader.

#### Kills Big Goose With Cross Bow

It was a wonderful day in the life of 10-year-old Raymond Nichols, of Polacca on the Indian reservation near here when Santa Claus brought him a crossbow for Christmas. During vacation he and his brother Bob and some Indian boys went hunting with the above mentioned crossbow. Rabbits and numerous birds barely escaped with their lives, but the big event of the day happened just as they were returning home about sundown.

One Indian boy named Daniel gave a shout and pointed to an immense Canadian honker that was feeding along the water's edge in the First Mesa wash, and threw a club down, hitting the bird, which started to run instead of fly away, being either wounded or winded. Then as quick as a flash Raymond aimed with his crossbow and fired. Kerplunk went Mr. Goose, with an arrow through his neck. When the writer heard the conquering heroes coming he thought sure the whole Hopi Indian tribe had gone on the warpath. Some shouting that!

A. H. Womack and Ellsworth Nichols found that it measured six feet four and a half inches from wing to wing tip, and nearly 42 inches from beak to tip of tail.

Raymond is a son of Mr. J. E. Nichols of Flagstaff.—Coconino Sun.





## THE SPORTSMAN TOURIST

# Primitive Bows and Arrows

## Their Character and Uses in North America and the Wounds Caused by Them

**A**LTHOUGH among primitive man as we know him, there were other implements used for striking game or the enemy, at a distance, the bow and arrow was the general device for this purpose, and, except in one or two sections, was apparently the only one known in North America before the advent of the white man's gun with its powder and ball. Slings were used to some extent, and in South America—and also in a part of the Southern United States—the blow-tube with its dart was a common means of killing wild animals; yet from the Arctic down to the Isthmus of Panama the bow and the arrow was the weapon most generally employed. Among the Eskimo, where the bow was used to good effect, the lance and harpoon, hurled from a throwing stick, were also largely employed to secure the larger marine animals, as were a sort of bolas to capture birds.

Of the bow it has been well said that "in ancient times there was no other weapon into which the human being could throw so much of himself—his hands, his eyes, his whole mind, and his body;" and the North American Indians, practiced in the use of the bow from the time they could walk, became singularly skilful archers, and had devised bows perhaps as useful as any known to man. Nevertheless, these

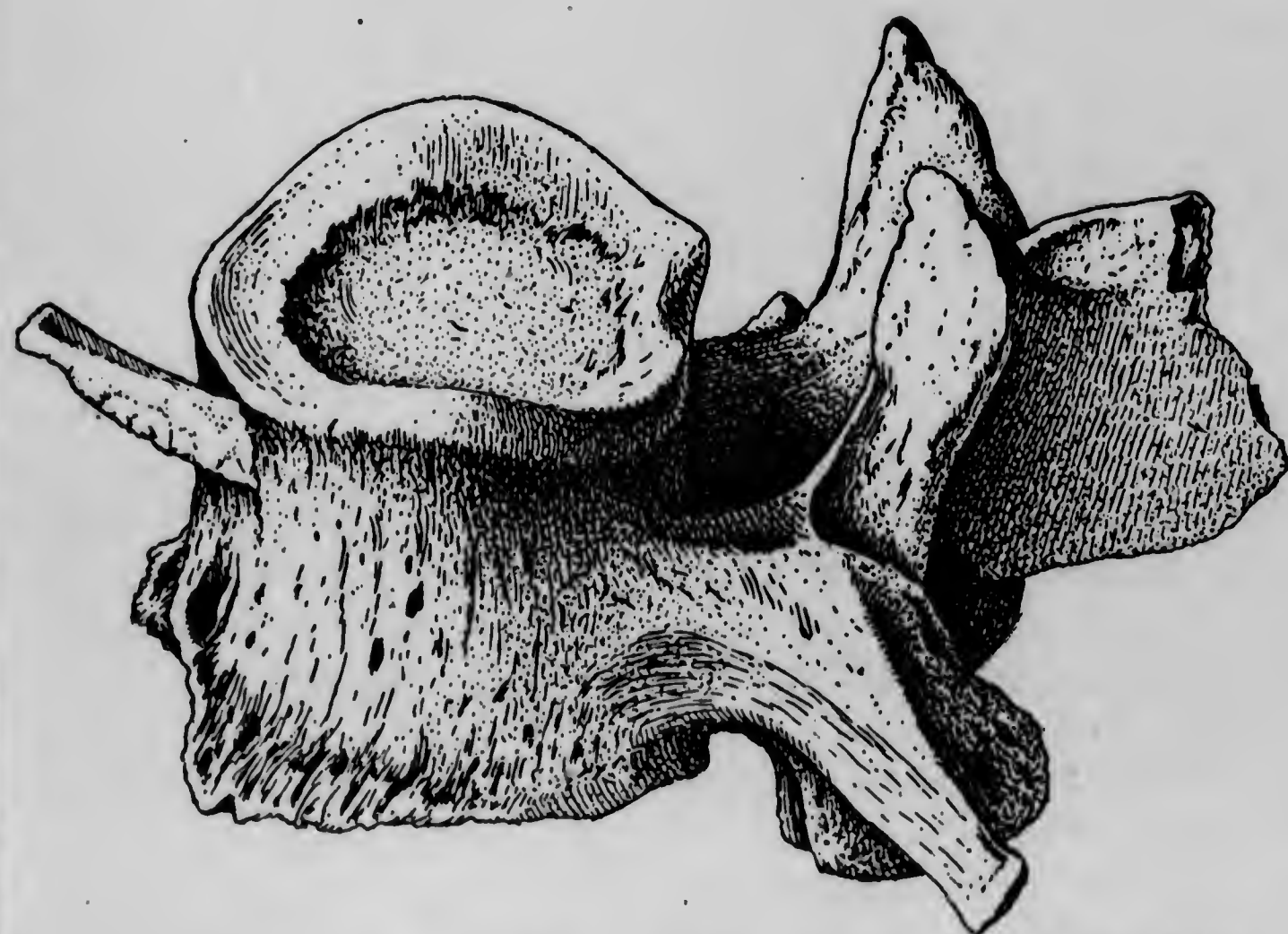
bows were not such mighty weapons as we read of in the old books. Commonly they were not so large as the long bow of the early English archers, nor as those said to have been used by savage tribes of Africa. It is true that some of the bows on the southwest coast of North America are said to have been six feet long, but this far exceeded the ordinary length of the bow for the continent in general, which was usually not more than four feet long, and sometimes considerably less.

Although these bows were not long, they were very strong, and yet their power differed with each individual, for each man sought to have his bow as strong as he could conveniently bend, and since each man had been practicing with the bow from small boyhood, he attained skill and a strength in this particular art far beyond anything with which we are familiar. I have seen not a few bows which I could bend but a few inches; yet their owners, Indians, apparently no more powerful than I, could draw the arrow to the head.

Much has been written about the bow of the North American, and it is high time that this was done, for the weapon which for untold centuries aided the savage in procuring food, and protected him in his quarrels with his enemies, has almost passed out of use in the northern

half of our hemisphere, and, except as a toy, scarcely finds a place among any of the peoples of North America. Though it is still useful in hunting the almost extinct sea otter, and though some of the natives of the far North still employ it to some extent in killing game and fish; nevertheless, it is rapidly passing out of use. This change has taken place within the last thirty years; that is to say, since the entrance of the railroad into the then unsettled West, and since the consequent destruction of the buffalo. Less than forty years ago, when great herds of the bison still roamed the plains, nine-tenths of the hunting done by the Indians was still with the bow and arrow, on horseback. True, the arm had been slightly modified by the advent of the white man. The Indians used arrows headed with keen points of sheet-iron instead of those of the stone, horn or bone as in primitive times. Yet the weapon was essentially what it had been, and the metal point merely saved the arrow maker the labor of finding and fashioning the hard stone, which had been the more common and useful primitive arrow-point.

For a time this metal point, brought to him by the white man, made life easy to the natives of the land. It added greatly to the range and power of the arm, since the keenly whetted edge



Prehistoric Human Vertebra Pierced by Stone Arrow Point.



Skull of a Mexican killed in a fight with Indians, near old Fort Concho, Texas, in 1868.



Prehistoric human tibia pierced by flint arrow point (France).





Ancient Human Bones Penetrated by Spear Heads. Found in a Kentucky Cavern.

of the point, propelled by the immense force of the bow, readily pierced the tough hide of any animal, where the rougher stone point would have been stopped by the mat of hair backed by elastic hide, or the more fragile bone point would have been shattered by contact with any hard substance.

The bows of the North American Indians were made of wood, bone or horn. Sometimes the bow was made of a single piece of wood, sometimes of several pieces; perhaps it was of wood alone, or it might be backed by sinew or by the skin of some animal. The material for the weapon was gathered whenever it was possible, and a man might have in his lodge a number of sticks, each of which he intended ultimately to fashion into a bow; or if he did not live long enough for this, the bow wood would descend to his heirs. As the most important implement of hunter or warrior, the bow was highly valued.

Bows of bone were made sometimes of sections of the rib of large animals, spliced and glued together, and were usually backed by sinew. Those of the antler of the elk were sometimes in a single piece, and at others in sections, beveled at the ends, and neatly glued and spliced. Bows of horn were often made of several pieces, similarly glued and spliced, but the horns of the mountain sheep were sometimes cut into long and slender rods which were straightened, laid together, glued, and backed by sinew. Another type of sheep-horn bow was in a single piece, the horn being cut in a spiral from base of horn to point, this spiral being steamed or boiled and then straightened and caused to dry straight. Bows such as these were unusual, but they were also very powerful, and never wore out. On the other hand, it is said, that bows made of bone

or of antler were more for show than for use. They were good to look at, and for a time were effective, but after a few years' use became dry and brittle and broke.

Next to the bow, and in fact so much a part of it that it cannot be separated from it, is the arrow, a complex implement, the development of which we may imagine to have been very slow, and which no doubt was well advanced toward its present form before the bow was thought of. We may fancy the arrow to be the outgrowth of a simple stabbing instrument, which later developed into a dart to be thrown from the hand, perhaps similar to certain toys still in use among the children of our plains Indians. From the stabbing instrument, the development may perhaps have been, on the one hand, simply to the thrusting tool, which became the lance, used in war and the chase in our own times, and on the other to a light dart, to be thrown first from the hand, then from a throwing stick, and lastly, as has been indicated by various writers, as a dart to be propelled by the bow, and in this combination to be effective in war up to a distance more than three hundred yards—a weapon more dangerous to those against whom it was used than was the old cap and ball pistol, which came into use within the memory of living men.

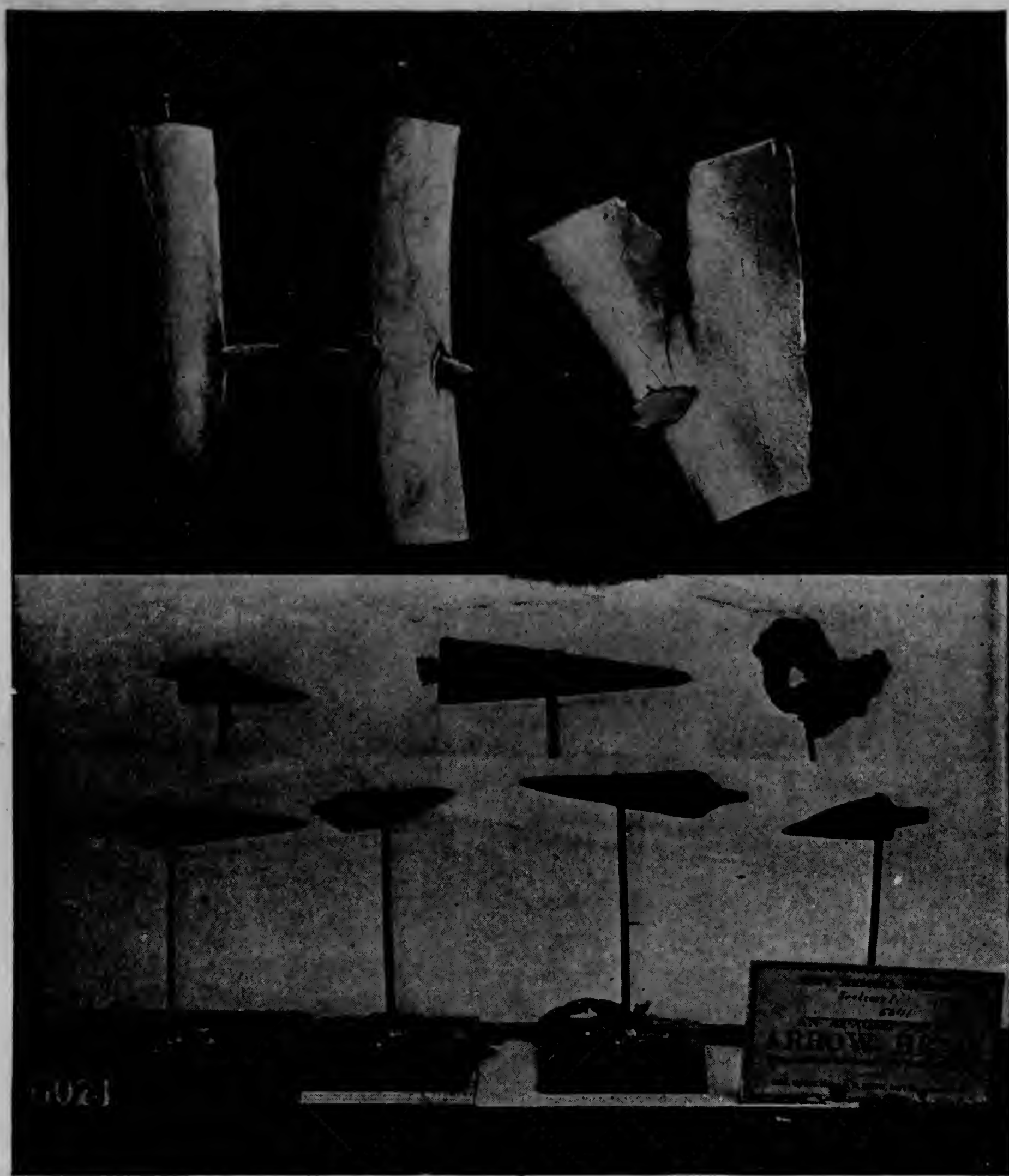
The arrow consisted of three essential parts, the head, the shaft, and the feathers. Sometimes the shaft was compound, consisting of more than one piece of wood. The primitive head was very various. The feathering is comparatively a modern invention, so much so that today traditions exist as to its development, and the various steps toward the improved feathering of modern times are given. Even within the last forty or fifty years the children among our wilder tribes have employed very primitive

forms of arrows; using in their hunting of little birds arrows without heads, and having merely a sharpened, fire-hardened point, arrows without feathers; and again, arrows feathered after an earlier method, of which, as practiced by adults, we know only by tradition.

The wooden bow is constructed of a great variety of woods, each tribe having selected for this use that tree growing within its territory which is best adapted to the purpose. Besides that, certain tribes received from other tribes, in the way of trade, staves of woods which did not grow within their range. The bows of the Atlantic slope, of the Southern United States and of the Mississippi Valley, were made chiefly of hickory, oak, ash and hornbeam; those of California, of osage orange, coffee tree and ash; those of the Southwest and of the interior, of cottonwood, willow, mesquit, osage orange, juniper and mulberry; those of the extreme North, of willow, spruce, birch, maple and cedar; while the Pacific slope tribes used yew and spruce. Besides these, some of the plains Indians used cedar, cherry and ash—the last but seldom, because it lacks spring, and soon loses whatever spring it has. The wood used by the Eskimo was chiefly driftwood, and such timber as they might obtain from wrecks, and by trade from the whaling ships that visited their shores.

Over much of the area of western North America the bow was strengthened and preserved by a backing of sinew laid on with glue after the bow was finished. This sinew added much to its power, and tended always to keep it straight. It acted as a perpetual pull in the direction reverse to the string, and this pull was so strong that I have seen a fine hickory bow after a few years of disuse absolutely pulled out of shape and given a curve of two inches or more against the string.





Upper Group.—Portions of ribs and shoulderblade of buffalo transfixed by iron arrows. In the middle group the arrow point on the left was one of hoop-iron withdrawn from the brain of a soldier nine days after being wounded by Apaches.

After the bow had been finished, trimmed down to its proper shape, and with the knocks cut in the two ends for the string, the back of the bow was rubbed with a piece of bone, usually a fragment of a rib, until it was smooth and polished. The dry sinew, of which the bow-maker had an abundance, was now taken, broken into threads with the finger nails, and placed in a bowl of water. The best sinew was that taken from the loin of the buffalo, extending from the neck back to the hips. This was always saved, the flesh scraped from it, and the long strips hung up to dry.

The glue used for applying the sinew was made by boiling the shavings from the skin of the neck of the buffalo bull; or, if this was not convenient, the skin of the neck of any large ruminant might be used. Boiled with water these shavings made strong glue. With a stick this glue was applied to the back of the bow,

and the moist threads of sinew laid on it side by side straight along the bow. After the first layer had been applied, and had time to dry, other layers were put on over these, until finally the layer of sinew threads might be the thirty-secondth of an inch in thickness. The final operation in this application was to give the back of the bow a thick coating of glue, which as it dried was rubbed repeatedly with the bone that had been used in smoothing the wood. After the glue was thoroughly dried, any loose ends of sinew, or any glue that had spread from the back were removed with a sharp knife. The ends of the bow were now wrapped with sinew, applied as before with glue.

Not all bows were made in precisely the same way. Different bow makers had different methods, each man of course believing that his way was a little better than that of any other. Some men, for example, did not shred the

sinew, but applied it in wide strips, sometimes quite as wide as the bow itself. These were dampened or wetted and were laid on the glue, and other wide strips were laid over them. Sometimes the grasp at the middle of the bow was wrapped with buckskin or red cloth, applied with glue; or the buckskin or cloth might be merely glued on at the back and sewed together beneath. Some tribes painted the back of the bow with various colors; others, while the glue was yet moist, sprinkled over it powdered gypsum.

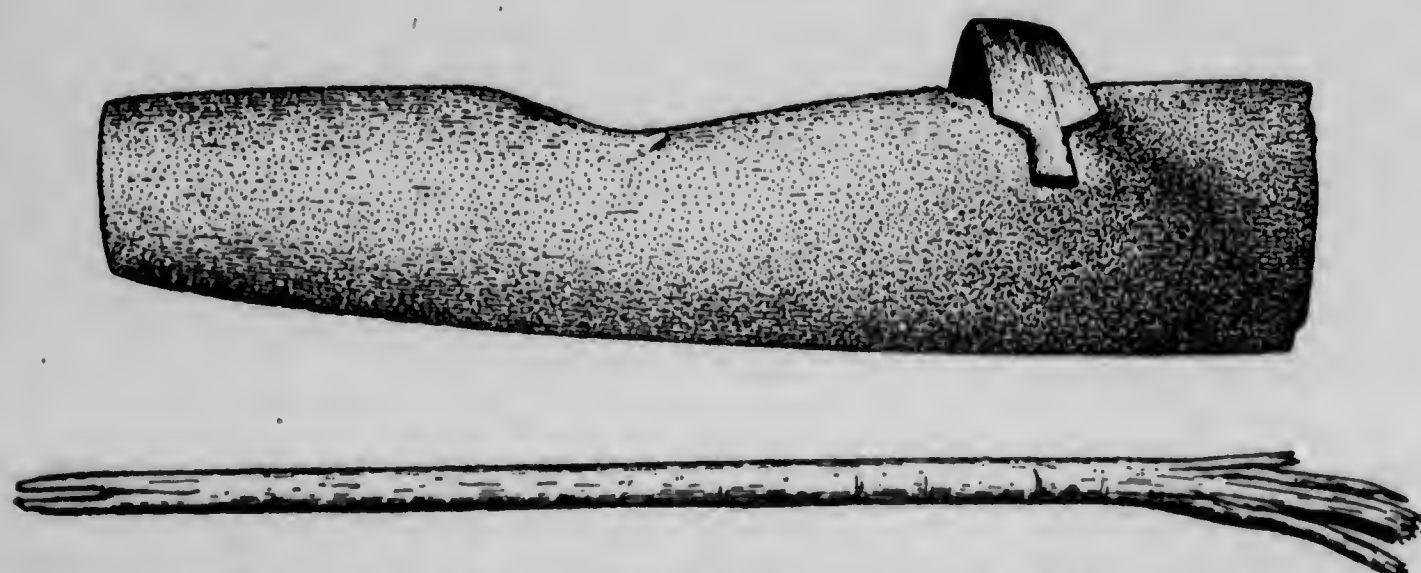
The bow-string was usually made of twisted sinew, sometimes put on the bow green and allowed to dry there. In the Southwest, however, the string was sometimes made of vegetable fibre. In other sections it might be made of strips of rawhide, or of the intestines of animals.

The bow and its arrows were almost always carried on the back, in cases made of the skins of animals. The bow-case was a long and narrow bag, just wide enough to admit the unstrung bow. Immediately beneath that, and parallel to it, both cases usually being attached to a stiff rod of wood nearly as long as the quiver, was the shorter, wider bag for the arrows. It was slightly longer than the arrow, and when arrows were to be drawn from it they were grasped about the feathers, so as to prevent this important part of the dart from being ruffled or knocked out of shape. Among the plains tribes in old times the best quivers and bow cases were made from the skin of the otter, but the hide of the panther was also highly valued for this purpose, and bow cases and quivers were frequently made from the hide of the buffalo calf. In later times the skins of cattle were used for the same purpose, and I have an old bow case and quiver made from the skin of a mule, one of the pack train of the Seventh Cavalry, killed at the time of the Custer fight.

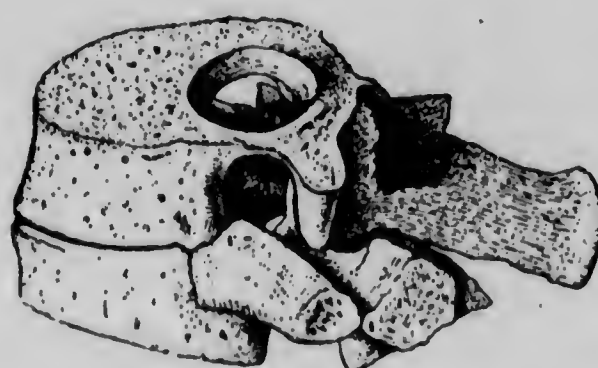
It was necessary not only that the Bowman should have a convenient means of carrying and keeping together this most important part of his equipment, but also that they should be protected from the weather. Rain and even damp weather tended to injure the bow and arrow, softening and rendering sticky the glue used in the manufacture of the bow, and in applying the feathers to the arrow, and what was more important, also moistening the bow string, which stretched and so became useless. How important this might be is shown by what happened at the once famous fight at the mouth of the Musselshell in 1868, as related years ago in *FOREST AND STREAM* by Harry McDonald—*quorum pars fuit*. What the rain did in this case is graphically told.

G. B. G.

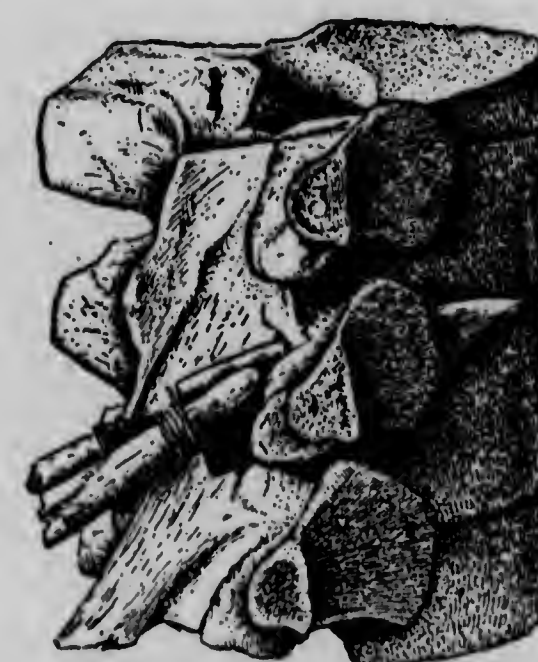
[TO BE CONTINUED.]



Buffalo rib, with transfixed iron arrow head; also broken shaft of same arrow.



Thoracic vertebra with iron arrow or knife-point passed directly into spinal cord, causing instant death.



Human vertebra with iron arrow heads. Man killed in Indian fight near Fort Concho in 1869.



**Recent Exploration of Caverns in the Ozarks.** — Early in May, the Department of Archeology of Phillips Academy, Andover, Massachusetts, sent an expedition to Benton and Madison counties, Arkansas, to explore certain caverns that had been seen by Mr E. H. Jacobs, who had been sent on a preliminary trip through the White river country. Mr Jacobs reported the existence of more than thirty caverns within an area covering approximately eighty by forty miles.

Dr Charles Peabody, the director, and Mr W. K. Moorehead, the curator of the department, spent five weeks in the field. From Fayetteville, Arkansas, they examined the country southward and eastward through a region never before visited by archeologists. Four caverns were explored, one of them in limestone and the rest in sandstone. The largest, Kelley Cavern, is about seventy meters in extent, with an overhang of thirty meters, while the bluff is about fifteen meters high. The ashes in this cavern ranged from one to three meters in depth, requiring a force of from twelve to fifteen men for more than two weeks to remove them.

The character of the cave material differs essentially from that found on the surrounding village sites. Shallow metates were numerous in the ashes of the caverns, thirty-seven having been found in Kelley Cavern alone. The extreme scarcity of certain other artifacts in the region deserves mention. Only one or two grooved axes have been found; there are no celts, no slate ornaments or problematical forms, no grooved hammers, no hematite implements, none of the spades and hoes common in the East and North, and only two pipes have been discovered in the entire region; but everywhere in the fields are great quantities of chips, spawls, hammerstones, knives, and projectile points — larger numbers indeed than either Dr Peabody or Mr Moorehead ever saw in any other part of the United States. The collection brought to Andover numbers about 1200 specimens.

The country is difficult of access, most of the caverns lying twenty to thirty miles from the nearest railway. The elevation ranges from 1300 to 1600 or 1700 feet. Judging from reports brought in by mountaineers there are many caverns in this region. These will be explored by Phillips Academy from time to time, permission having been obtained from the company which controls upward of 30,000 acres of land in the cavern country.



the continent, and is foolish to attempt it.

Aside from punctures, I have not had so much as a broken spoke on the whole trip, and only two accidents. One was a broken rim caused by a horse stepping on it when it fell and entangled his foot in the spokes, when in his struggle to get free he split a rim.

The other accident, which came so near being fatal to me, was on April 12, 1909, on a trestle bridge near Algodones, New Mexico. I was walking leisurely across, pushing my wheel, and the wind

almost on me. Catching hold of the bridge timber I turned a somersault as quickly as possible, and landed safely on my feet on the dry sand, 15 feet below. The instant I struck I looked up and the engine was crushing poor "Racy Pacy" into a shapeless mass of ruins. The saddle, handle bar, pump and my watch were uninjured, and are still in use on the second wheel the Miami Co. made for me, and which they sent to Albuquerque a month later.

The broken wheel I had already ridden over ten months in 23 states, 5,955



PHOTO BY KOLB BROS., GRAND CANYON, ARIZ.

MONTEZUMA'S WELL.

was blowing so violently in my face that I did not hear the train approaching from the rear. But suddenly I felt the tremble of the bridge, and whirling around there saw the California limited express of the Santa Fe, not over 150 feet from me. instantly I turned to the right, to jump the wheel and myself to the dry sandy river bed. But in my hurry the wheel fell across the rail and I fell over it. Glancing over my right shoulder I saw the powerful engine was

miles, and it would have been all right now if it had not been demolished by the train.

I have not tried to make any record for distance or speed, as I have often gone hundreds of miles out of my way to see any interesting locality or wonder of nature. Hence the distance I have traveled would have taken me from one Portland to the other and back again, or twice across the continent. I travel for the pure love of travel and adven-



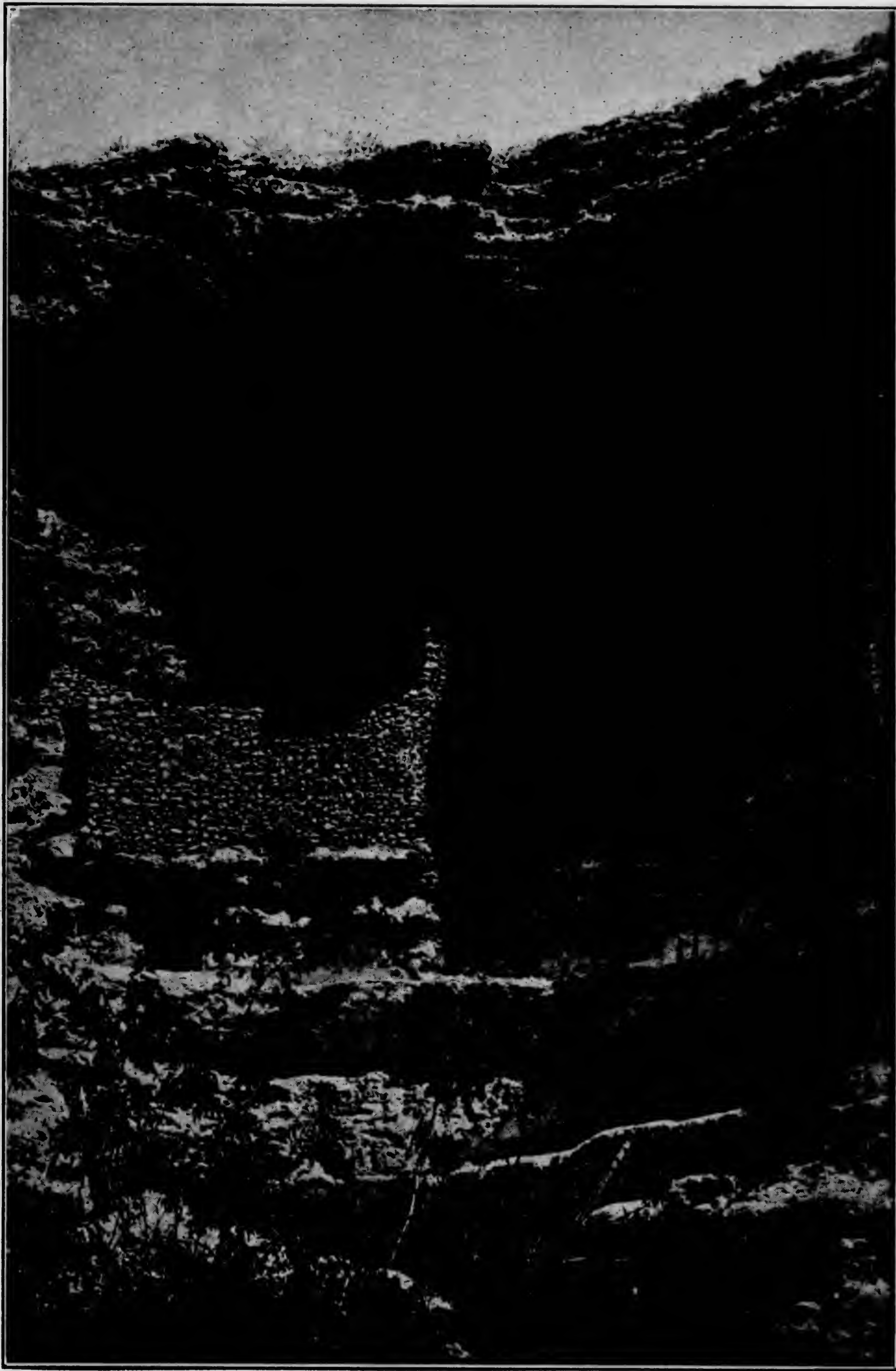


PHOTO BY KOLB FROS., GRAND CANYON, ARIZ.

MONTEZUMA'S CASTLE.

One of the most noted of the Cliff Dweller ruins.

*Outdoor Life - Sept. 1910*





PHOTO BY KOLB FROS., GRAND CANYON, ARIZ.

MONTEZUMA'S CASTLE.

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Retake of Preceding Frame



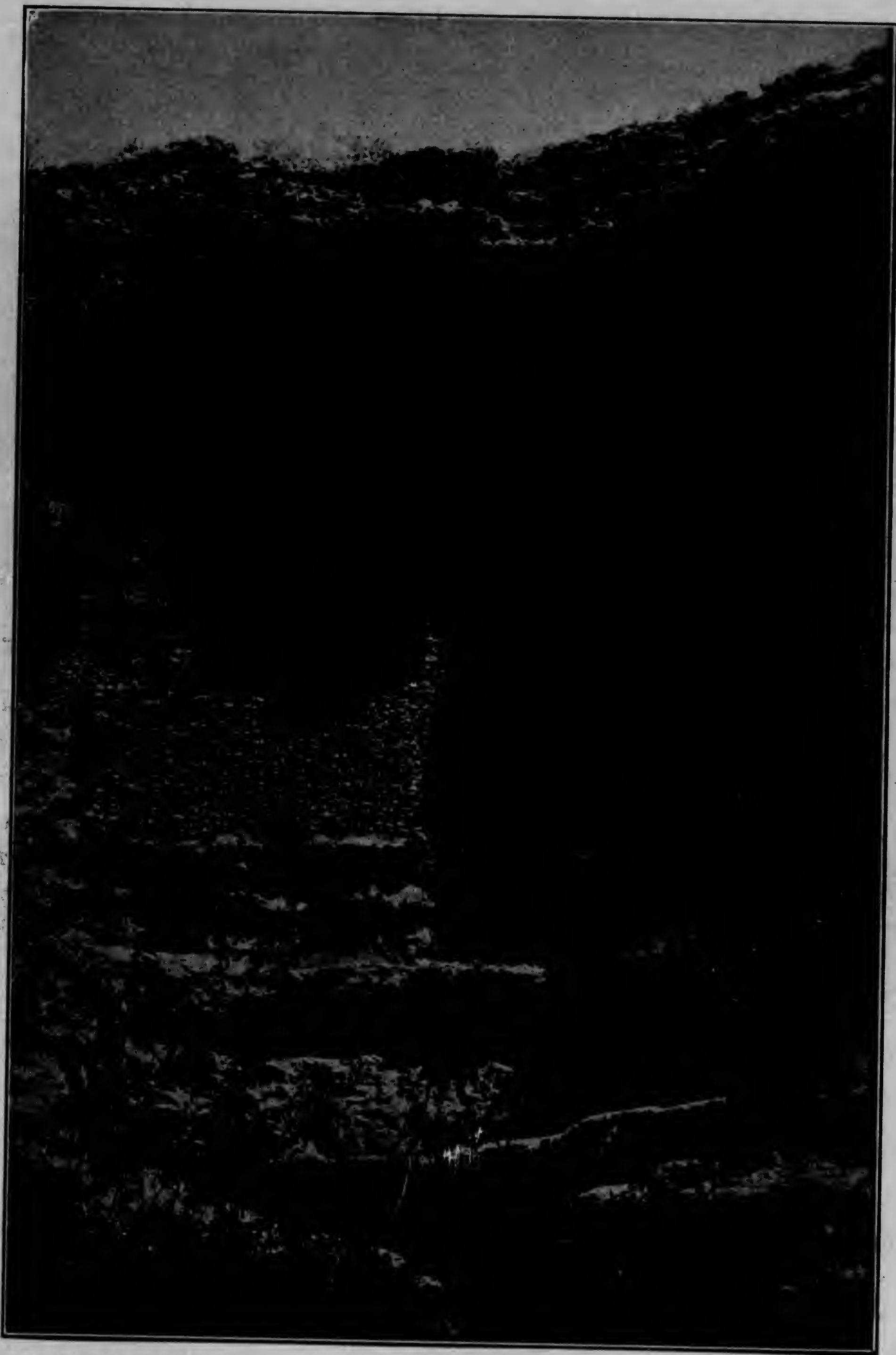


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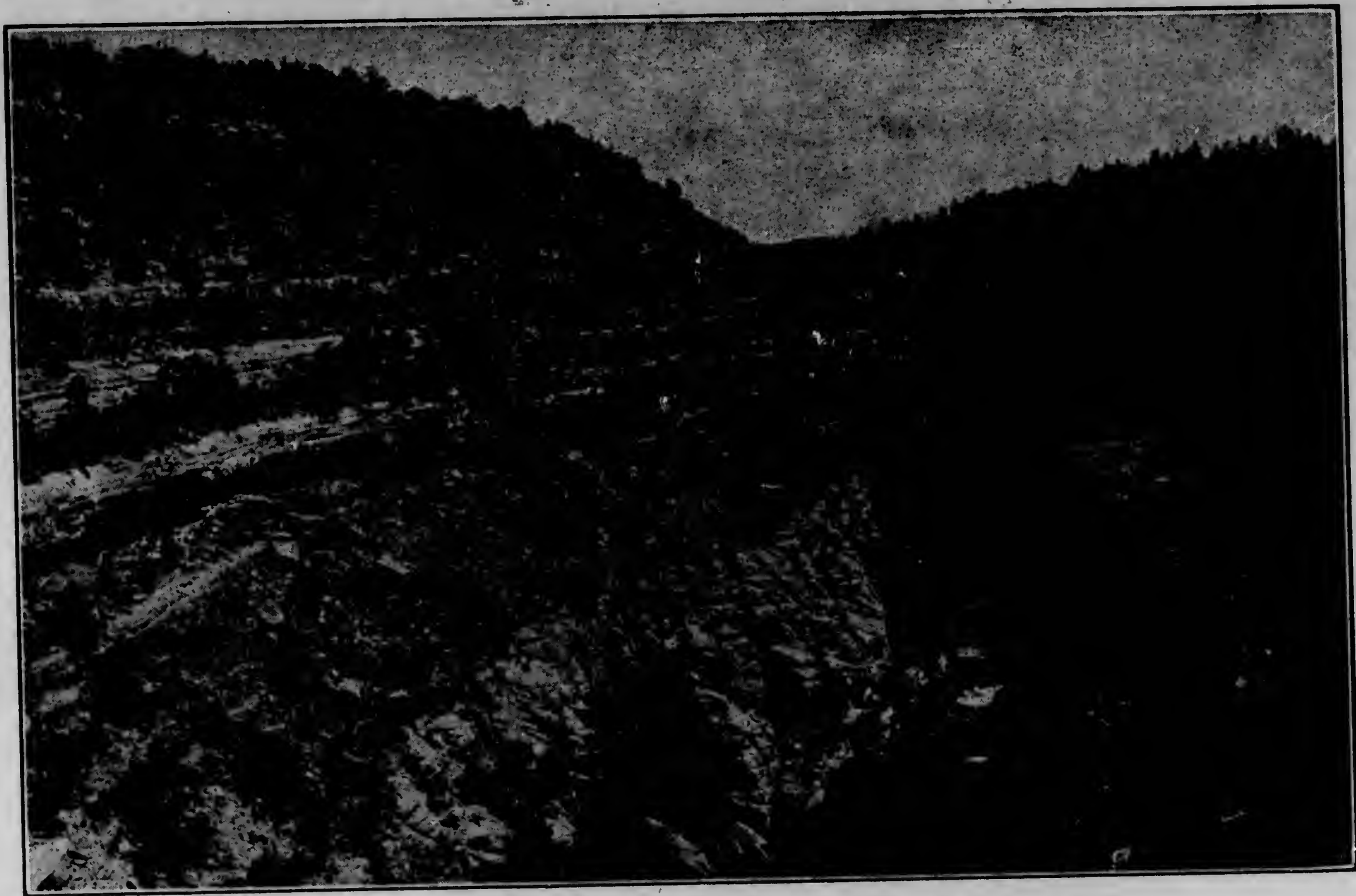
ture, not because I care for notoriety or credit for doing something sensational. I believe that when people come to live more out of doors and to worship God in nature's grand open cathedrals amid the wonders of the air, the roads, the mountains and the plains, they will realize just how really narrow and obscure men can be who shut themselves in the cities like rats in a cage and yet flatter themselves that they are superior and cultured.

health, genius and energy. You are a human dynamo on wheels, who gathers news first hand from the scenes through which you pass and reduce it to the art preservative for present and future generations. May wisdom guide you!"

At Omaha, Capt. Jack Crawford, the poet scout, wrote:

"I'd rather meet a wayward stray  
And help him to atone,  
Than entertain the angels at  
A picnic round the throne."

Many writers expressed their kindly sentiments and invoked all manner of



CLIFF DWELLINGS, WALNUT CREEK, ARIZ., NEAR FLAGSTAFF.

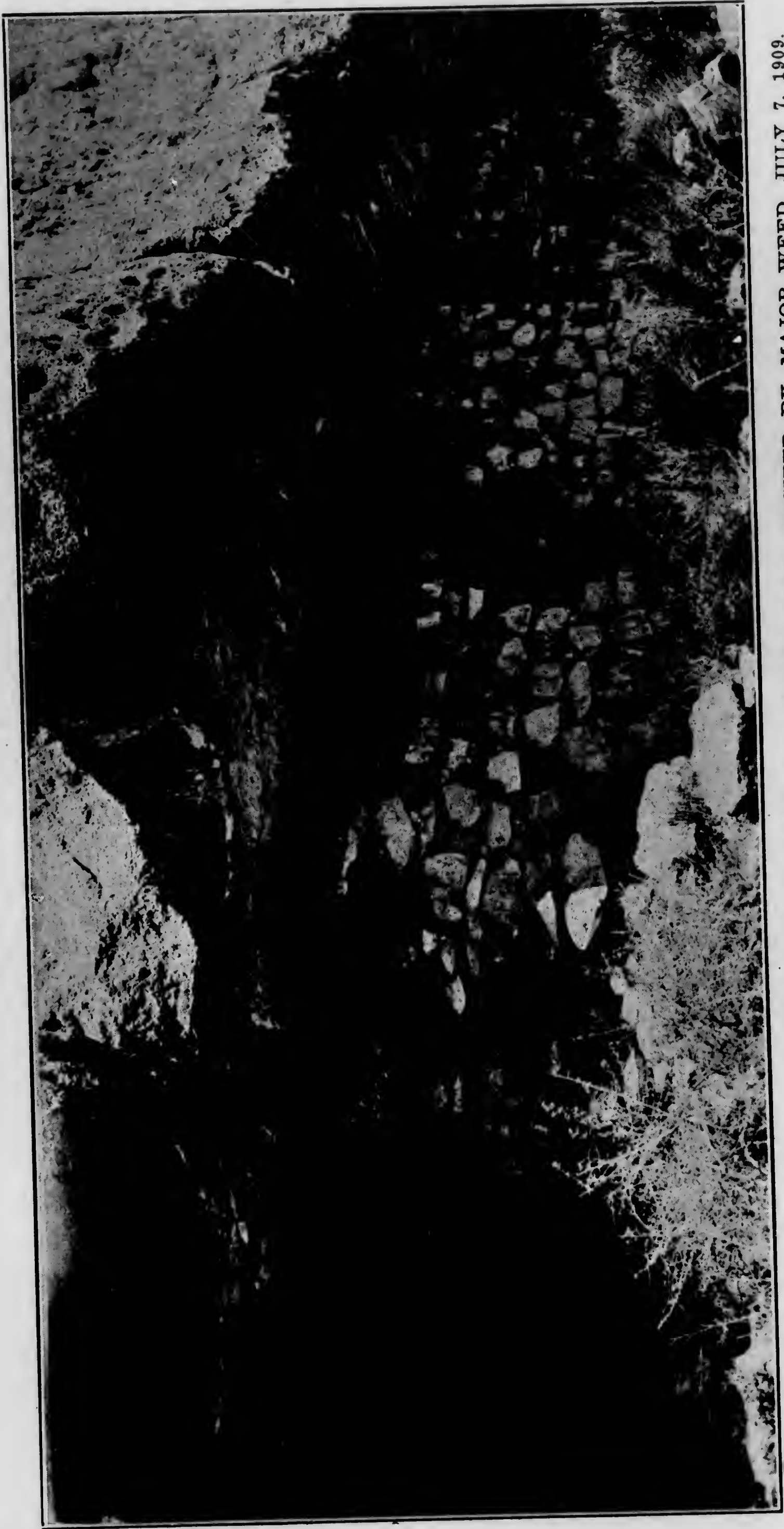
I carried a blank book in which I had my friends inscribe what they pleased. J. W. Ryder, editor Enterprise, Granite, Okla., wrote: "Here's to the jolly old joker who has bathed his feet in both oceans, and drank from all the creeks between them! Nothing like being young and frisky!"

At Lawton, Okla., J. W. Kieff, city editor News-Republican, wrote: "Comrade of the Craft! Here's to your

blessings and good wishes for my prosperity and success, and though written mostly in our own language, some are in Latin, French, Spanish, German, Chinese, Esperanto and Shorthand. It is a valuable book to keep as a souvenir.

Arid deserts were encountered, where for 65 miles there was not a tree, bush or shrub to afford shade or to lean my wheel against, not even a house. and the thermometer ranging from 100





CLIFF DWELLINGS IN WALNUT CREEK CANON. NEAR FLAGSTAFF, ARIZ. VISITED BY MAJOR WEED, JULY 7, 1909.

*Outdoor Life - Sept. 1910.*



It is fed by living springs situated down in the water, and has a subterranean outlet 800 feet away, from which is constantly pouring a stream the size of a barrel. Around the inner walls above the water are caves which have been inhabited by the little cliff dwellers in remote ages. Some of these are quite large and have been partitioned off into small rooms by stone walls. In one of these there seemed to be the impress of a baby hand, as if done when the mortar

soil has accumulated, which supports a pine tree seven inches in diameter, and 20 feet high.

One of the most interesting of the many cliff dwellings in Arizona is situated in Walnut Cañon, 10 miles southeast of Flagstaff, over a fine road. Here were the homes of hundreds of the ancient dwellers in the sides of a high bluff, amid the grandest of scenery, embracing forest, mountains and deep gorges. Halfway there is the Bottom-



OTHER CLIFF DWELLINGS IN WALNUT CREEK CANON.

was soft, perhaps a thousand years or more ago.

Pivot Rock, near Randle's Mill, on the road by Mormon Lake and Long Valley towards Strawberry Valley and Pine, is a great natural curiosity, and comparatively little known. It is like the head (though flat and broad) of an immense giant set up on a small neck a foot in diameter, which rests on a broad, flat rock. On top of the head, some dirt or

less Pit, into which William J. Bryan and a party of friends came very near falling one dark night as they were driving by. The visible pit is 200 feet across, and 150 feet deep, but at one end of the main pit there is an opening or tunnel a short distance, then a drop down into the Bottomless Pit, for it has been sounded a thousand feet, and no bottom found.

The Petrified Forests near Holbrook,



Arizona, I visited, but there is not room here to describe this mighty wonder of nature. It is worth visiting, even if you have to go a thousand miles.

The cliff dwellers were evidently of short stature, probably from four and a half to five feet, tough, wiry, active people who delighted in climbing up and down mountains, and whose food was mostly corn of much smaller size than any now raised.

While crossing the continent, I found many places now almost dry, where the marks on the rocks plainly show the existence of former ponds and lakes and the beds of what were once running streams, for our country and the world in general has undergone many remarkable changes, and many places where people existed are now dry and barren.

Mighty convulsions and upheavals have changed the topography of this old world of ours during the millions of years it has been whirling in illimit-

able space, and the study of geology and developments of science, as well as extensive travel and diligent research and personal investigations verifies the truth of this statement to a remarkable degree.

Though a somewhat lengthy article, this does not describe a quarter of what I saw and experienced in my ride of over 8,000 miles in crossing Uncle Sam's big ranch. If it should induce any of the readers of Outdoor Life to live more out of doors and see more of their own land, I shall be glad.

I will state in closing that in just eight years to a day, when I was from 55 to 63 years old, I made a bicycle tour of 17 American and 20 Mexican states including Cuba and Canada, covering 49,735 miles. I have ridden in all since 1895, a little more than 100,000 miles, and expect to still continue if God spares my life, many years more, as I was only 69 on June 6, 1910.

### The Music of the Stream

In camp beside a mountain stream  
I hear the coyote's call;  
My rod and line lie carelessly  
Against the old windfall;  
The feverish tension of the day  
Subsides as night comes on,  
And sweet sleep lures me to my cot—  
Another day is gone.

The noisy ripples of the stream  
As dancing on, they play,  
Bring dreams of childhood's days to me  
With laughter wild and gay.  
Far up the cañon's narrow path  
I hear the muffled roar  
Of waters bounding o'er the rocks  
From haunts they'll know no more.

Such dreams, such sleep, but few that know  
The fragrance of the air  
Soothes like a gentle stimulant  
And frees the mind from care.  
I've scarcely closed my eyes, it seems,  
When Nature's morning lay  
With silvery notes, brings into life  
Another happy day.

C. B. DAVIS.





CLIFF DWELLER RUINS BETWEEN COLONIA JUAREZ AND COLONIA PACHECO.

mounds are scattered over all parts of the country traversed by us, as are also the foundation work and terraces. This foundation work—if, indeed, it may be so termed—is found in the shape of tumbled-down walls of rock in height from one to four feet and about two feet thick at the base. It is believed that adobe or some other such material was used for the upper part of these dwellings in which the rock formed the lower portion. In many places the outlines of these rocky foundations form as many as twelve rooms—from that down to one, the smaller number being the more common. Nearly every point or elevation in the hills had what appears to have been a fort or lookout at the summit, a fact which makes quite ap-

parent the fear that these people held for their enemies.

Port-holes about four inches in diameter (from which undoubtedly the bow and arrow were held in readiness at the approach of danger) are seen in the cave dwellings, something unnoticed by me in the Colorado ruins. In the latter ruins all are constructed of rock, while in Mexico all the cave dwellings that I saw are of adobe, or some adhesive substance that hardens like cement. I believe both adobe and some form of cement were used, as there is quite a difference between them.

The most numerous evidence of the life of these people is the great number of terraced gulches that were found everywhere along our route of travel. In





CAMP ON THREE RIVERS.

In the foreground a string of twelve fish weighing fourteen pounds, caught in one hour.

fact we could go nowhere in the mountains that we did not see these terraces. They would take a small gulch, we will say, that is 300 yards long; at every 15 to 50 yards they constructed stone walls across the gulch from 15 to 100 feet long. These walls as they now stand are from one to 10 feet high. They formed backstops to little areas that were either filled with soil, into which the rains were allowed to wash—soil, and on this they did what little farming they were able to do—for, be it known the surfaces of the mountain section hereabouts and for at least 200 miles to the southward is composed of little soil, broken rock forming the chief constituent. These little farming tracts had,

therefore, two very necessary virtues. They were composed of prime soil, and this soil was well watered by the rains and retained well the moisture so acquired.

We ate lunch one day in sight of some cliff dwellings up the side of the mountain, located under a projection of rock similar to those seen in Colorado. These, however, were but one story, while the Colorado ruins extended to three and four stories. The nature of the rock, however, did not permit of higher structures. They were strung along in a row, all united, comprising about a dozen rooms in all. The walls were in an almost perfect state of preservation, better as a whole than those



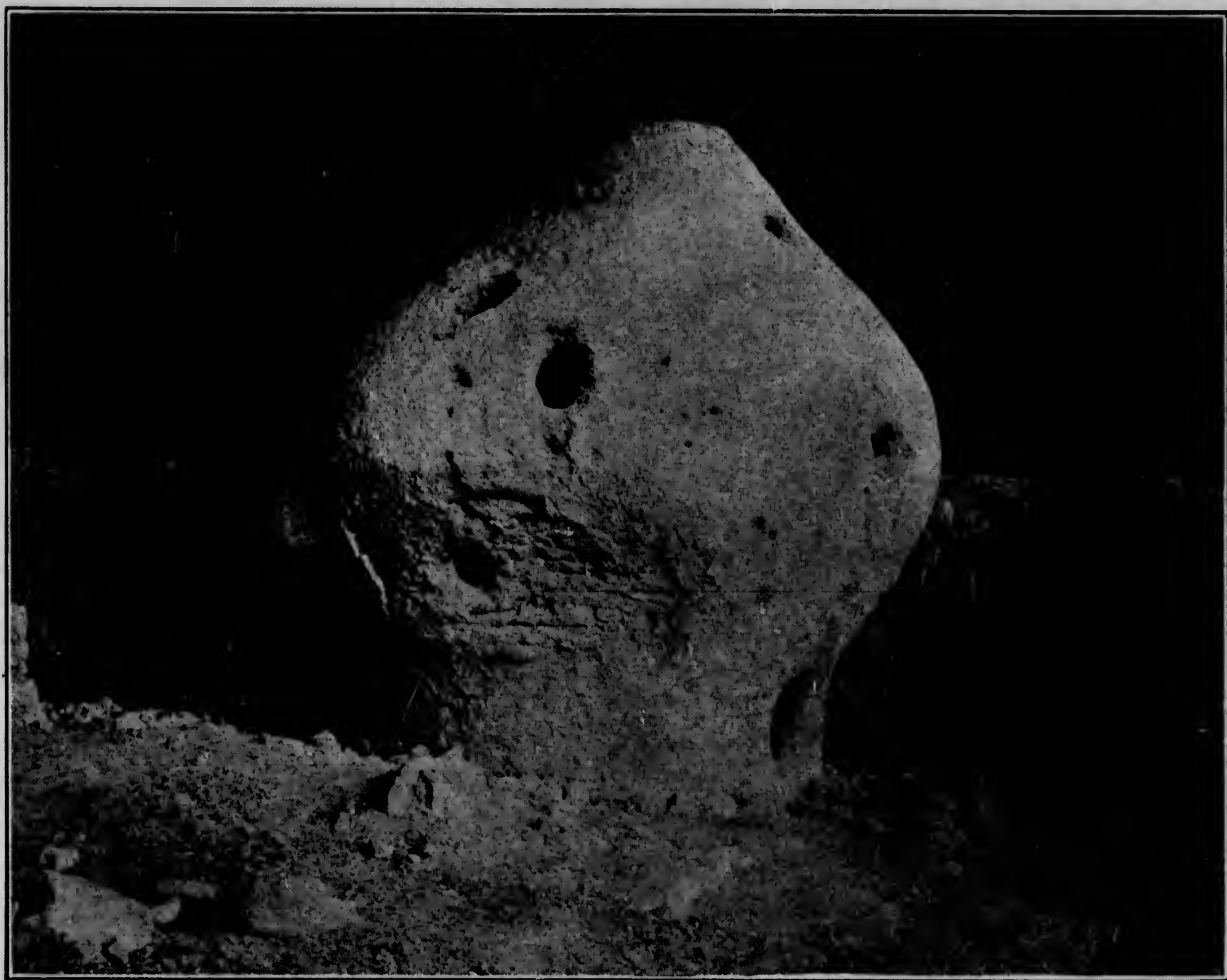
of stone I had seen in Colorado. We poked around some in the dust of these rooms, but found nothing more interesting than oak sticks used as fire pokers, seeds, corn cobs and hulls of nuts.

The openings to the rooms from the outside, and those on the inside connecting the ruins, were about 2x3 feet in size, with a 6-inch square notch cut in the wall below each opening, presumably that the inhabitants might the better drag their feet in going through. Some mummies had recently been taken from these ruins, including a woman and babe in an almost perfect state of preservation.

We also had the pleasure of visiting a more extensive ruin—that in Piedre

Verde Cañon, six miles down that stream from Colonia Pacheco. This ruin was built in the cliff about 100 feet above the stream, under a protecting ledge of rock that made a cave about fifty feet square, some twenty feet high at the opening and four feet at the inside.

Here the most prominent feature of the dwelling is an olla fifteen feet high and ten feet in diameter, constructed of adobe. Some thirty years ago this olla had but two openings—one at the top and another at its lower extremity on the side. Since then, however, vandals have disfigured it with two or three other openings. It was apparently used for grain or food material, the upper hole being used to fill it

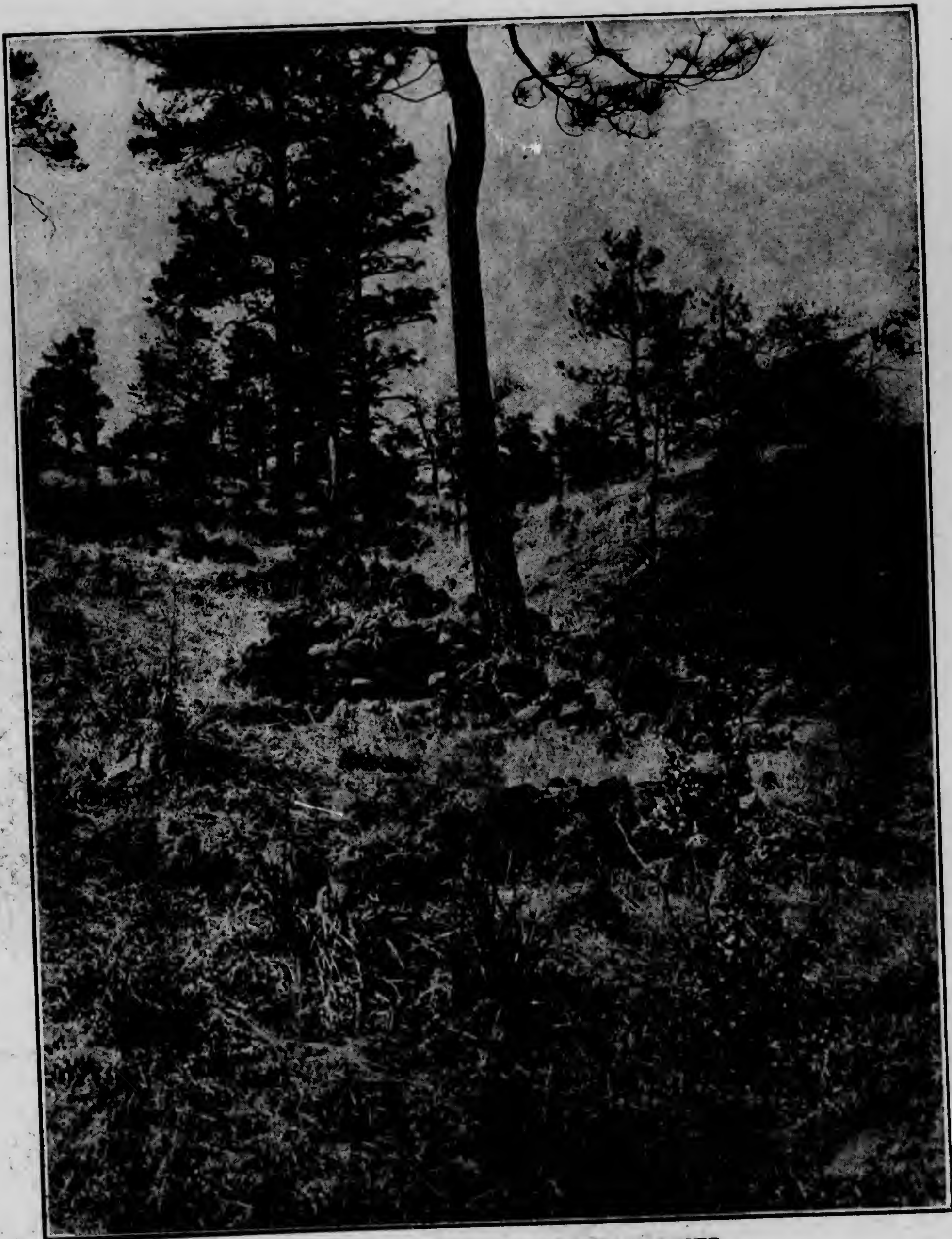


THE LARGEST CLIFF DWELLER OLLA IN EXISTENCE.

Located in Piedre Verde Canon, six miles from Colonia Pacheco, Mexico. Built of adobe. All the holes except the lowest one at right were cut by vandals.

*Outdoor Life - Sept. 1910*





WHERE THE CLIFF DWELLERS FARMED.

Sample of the rock-built terraces that are found in nearly every gulch.



armies that we must look for the physical salvation of the sons of men. Man may redeem himself from death, not by sweeping the heavens with the space-annihilating telescope, but by peering into the dust of the earth with the space-creating microscope.

We see then that the principle of the incarnation of ideas, of the realization in the world of substance of what had been vaguely foreshadowed in the world of mind, is a process which has gone on in science as surely but perhaps not so conspicuously as it has in art. The artist succeeds more or less perfectly to incarnate his ideas of beauty in stone, in wood, in metal or in pigment, but no painter ever yet expressed all the loveliness in his mind, pellucid though his pigments were; the poet strives to give utterance to the majesty of his imagination, but no poet was ever yet satisfied that his words, choice though they were, portrayed all the delicacy of his fancy or the glory of his dreams. The musician is conscious that after he has swept the lyre with melodies of transcendent sweetness, there are unheard melodies that are sweeter still; the preacher whose eloquence stirs the vast cathedral returns home depressed in that his burning words did not rise to the fever-height of his fervor. The saint, aiming at the highest ideals of holiness, has still to confess failure whether as anchorite, prophet, missionary or philanthropist.

But it is sometimes given to the man of science to touch, to taste, to handle what was once only a notion, a suggestion, a forecast either in his own day or in that of a less fortunate predecessor in the earlier times of the history of a thought.

D. FRASER HARRIS

DALHOUSIE UNIVERSITY

#### *A NEW FRENCH CAVERN WITH PALEOLITHIC MURAL ENGRAVINGS*

To Count Begouen, of Toulouse, and his two sons, belongs the credit for the discovery of a new cavern with paleolithic mural engravings. The eldest son, Max, is at present a pupil of Professor Emile Cartailhac, as was his father before him. Count Begouen, with

his family, is spending the summer at his country place, "Les Espas," at Montesquieu-Avantès, near St. Giron (Ariège). On property adjoining his is the cavern of Enlène known for many years and where the count himself recently discovered a finely carved spear-thrower of reindeer horn. Near Enlène the Volp, a small stream, disappears under a ridge of limestone and reappears about one kilometer farther down. The escarpment where the Volp reappears has long been known as the Tuc d'Audoubert. After improvising a small canoe made of a box and given stability by a float on either side—a keg and an oil can, on Saturday, July 20, Count Begouen and his sons ascended the channel for about 50 meters, as far as the present level of the water would permit of rowing. By bridging with ladders at intervals they ascended on foot much farther and then climbed to the entrance to a cavern on the left. This led to a series of large chambers remarkable for the quantity as well as beauty of the stalagmite and stalactite formations. Luckily these had not been despoiled by the hand of the tourist. Only two or three times did the party of four find evidence that they were not the first to behold these wonderful art products of nature. At one point a name with the date 1689; at another a name and the date 1701. After traversing a number of galleries they at last came to a small corridor near the end of which they saw a small pit which appeared to have been recently dug in a search for artifacts. The disappointment on finding the pit indicating that another archeologist had been there before was not of long duration, for on looking up they beheld simultaneously a number of animal forms delicately incised on the sloping walls, some of them surrounded by thick layers of stalagmite, others partially hid by the same. The figures include about half a dozen horses, nearly as many bison, one reindeer, one bovine animal and some ten curious signs, probably a weapon. One of the horses is represented as being caught in a trap, others as being struck by arrows. The figure of the reindeer



is of special importance because of its rarity as a mural ornament in the Pyrenean caverns.

On the day of the discovery of the parietal engravings in the cavern of Tuc d'Audoubert, I was leaving the cavern region of northern Spain for Toulouse to join Professor Henry Fairfield Osborn, of the American Museum of Natural History, in a tour of the French Pyrenean caverns under the guidance of Professor Cartailhac, to whom Count Begouen telegraphed news of the find. Professor Cartailhac was able to add this new cavern to our itinerary. We reached "Les Espas" on July 25 in time for luncheon, after which Count Begouen and his sons conducted us to the cavern of Tuc d'Audoubert. Although they had been to the cavern every day since the discovery in a search for more parietal art, certain examples remained to be either discovered or interpreted on the day of our visit. Near the entrance to the corridor previously mentioned Count Begouen found an additional engraving of the horse. Some incisions discovered on one of the previous days, the trained eye of Professor Cartailhac made out to be a figure of *Elephas primigenius*. On a projecting rock two spots of red paint had been seen on a previous day but to my satisfaction it remained for me to be the first to recognize them as two eyes, the projecting rock being an animal head in the round. The paleolithic artist was quick to take advantage of fortuitous resemblances in arriving at results that would otherwise require much time and labor as exemplified not only in this latest find but also in previous ones, for instance, at Niaux, Altamira and Castillo.

Tuc d'Audoubert is the most beautiful cavern in southern France. Fortunately it is in appreciative hands, for Count Begouen is mayor of the commune (Montesquieu-Avantès) in which it is situated. He will take immediate steps to protect its treasures of ancient art and of nature from vandalism. He and his son Max will also prepare a report fully illustrated, which is to appear in the monumental series published under the auspices of the Institut de Paléontologie Humaine, Paris. The importance of the find

and the fact that two Americans took at least a small part in the first few days of exploration justify me in sending at the earliest possible moment this short notice to SCIENCE.

GEORGE GRANT MACCURDY

TOULOUSE,  
July 27, 1912

#### INTERNATIONAL CONGRESS OF ENTOMOLOGY

The second International Congress of Entomology met at Oxford at the beginning of August under the presidency of Professor E. B. Poulton, F.R.S., Hope professor of zoology. According to the report in the *London Times* Professor Poulton in his address paid special attention to the processes by which a species by natural selection seeks to maintain its place in the insect cosmos. Other papers upon evolution, bionomics and mimicry were contributed by the president, who gave an account of Mr. C. A. Wiggan's and Dr. G. H. Carpenter's researches in mimicry in the forest butterflies of Uganda; by the Rev. K. St. A. Rogers and by Mr. R. C. L. Perkins, who described and compared the color-groups of Hawaiian *Odynerus* (wasps) found on the two neighboring islands, Oahu and Kauai. In the section of philosophic entomology Professor J. F. Van Bemmelen (Netherlands) explained the phylogenetic significance of the development of the butterfly wing.

In the section of economic entomology the paper read by Sir Daniel Morris on behalf of Mr. W. A. Ballou, "Some Entomological Problems in the West Indies," demonstrated how an intimate knowledge of the life histories of insects may be put to practical uses, and how by the introduction of the natural parasite of an immigrant pest the attacks of the pest may be controlled and even defeated altogether. The question of international action to check generally the importation of pests was raised in the discussion of Mr. A. G. L. Rogers's paper on "The necessary investigation with relation to Insect and Fungus Enemies of Plants, Preliminary to Legislation."

In the pathological department Professor



The "Plasmodesmata" of Held and Paton, connecting myotome and neural tube, are not primary intercellular bridges, but are secondary connections of medullary origin. The "neurofibrillæ" are intracellular differentiations of the neuraxon processes of medullary cells. The methods used in the study of the histogenesis of the neurofibrillæ do not seem suited to the study of the development of the "plasmodesmata."

*The Teaching of Zoology and some Suggestions for its Improvement:* W. J. BAUMGARTNER, University of Kansas.

The paper showed that many more students take botany than zoology in the secondary schools. Some reasons were cited for this. Universities can help the teaching of zoology by furnishing some material. The teaching of zoology can be improved by assigning the student a special animal to report on to the rest of the class.

*Cestode Cytology:* R. T. YOUNG, University of North Dakota.

Both in larva and adult new nuclei in many cases arise *de novo* in masses of cytogenic protoplasm. The evidence of this is the appearance of small, densely staining chromatin bodies in these masses. These later surround themselves with membranes (or the membrane may arise first and the chromatin body later) and are then constricted off from the cytogenic mass, together with a small amount of cytoplasm to form new "cells." Some nuclei are typical, consisting of membranes surrounding distinct chromatin nucleoli; while in others the entire "cell" body is filled with diffuse chromatin, as is shown by micro-chemical tests. A count of some 34,000 nuclei showed only fifty cases of possible mitosis. Amitotic division of preexistent nuclei also occurs. It is probable that mitosis is degenerating in the cestodes, corresponding to their general degenerate condition.

*Fifty-one Generations in the Dark:* F. PAYNE, Indiana University. (Read by title.)

#### DEMONSTRATIONS

*Sections showing the Early Sex-cells of Amia and Lepidosteus:* B. M. ALLEN.

*Some Parasites of the Sleeper Shark:* H. B. WARD.

*Hydroids from the Illinois River:* FRANK SMITH.

*Sections showing the "Plasmodesmata" connecting Myotome and Neural Tube in Squalus:* H. V. NEAL.

H. V. NEAL,  
Secretary

KNOX COLLEGE

#### SOCIETIES AND ACADEMIES

##### THE ANTHROPOLOGICAL SOCIETY OF WASHINGTON

THE 446th regular meeting of the Anthropological Society, held April 12, 1910, was devoted to the retirement address of the president, Dr. J. Walter Fewkes, on "Cave Dwellers of the Old and New World." The full text of this address will be published later.

The unity of the human mind, said the speaker, has come to be one of the most fruitful working hypotheses in the science of culture history. Identities in human culture, under similar climatic and other environmental influences are among the strongest evidences that can be adduced in support of this theory. As human habitations, the most characteristic of racial artefacts, reflect better than all others the effect of environment, the object of the address was to indicate the bearing of a comparative study of cave dwellings from different geographical localities on the theory of mental unity.

A people of nomadic life whose habitations from their mode of life are perishable has little stimulus to construct lasting monuments. Sedentary people, on the other hand, construct habitations of material that will endure; caves when available naturally first afforded shelter for races seeking permanent dwellings.

It is difficult to find a primitive race where human culture has reached any considerable architectural development that has not, at an early cultural period, lived in caves or holes in the ground. Life in caves leads to buildings made of stone or other lasting materials. Permanence of building perpetuates racial traditions, serving as constant incentives to the construction of architectural monuments.

A study of the distribution of prehistoric cave habitations reveals a marked uniformity of cave dwellings in regions of the earth geographically far apart. Prehistoric cave dwellings of similar form may be traced from China across Asia and on both shores of the Mediterranean, in Mexico, Peru and the southwestern part of the United States. This distribution corresponds in a measure with that of great prehistoric monuments and follows closely that of the arid regions.

Caves as habitations are divided into two types, natural and artificial. The address treated more particularly of the latter, but views of both from the old and new world were shown.

The European natural cave as a shelter is prehistoric, having been abandoned in very early times. The natural caves of Cuba, Hayti and



Porto Rico were, however, inhabited by primitive men of low culture and characteristic speech when America was discovered.

Artificial caves in the Verde Valley, Arizona, were shown to resemble those in Asia Minor, the Crimea, Caucasus Mountains and Canary Islands. Exact counterparts of the "tent rocks" or "cone dwellings" of the Otowi Canyon, in New Mexico, occur in Cappadocia near Casarea Mazaca. Views were shown illustrating the resemblances of certain cliff houses in Arizona, and monastic establishments in Thessaly. The speaker called attention to an inhabited subterranean village Matmata, in northern Africa, and underground habitations, now deserted, in volcanic cones near Flagstaff, Arizona. The resemblance in architecture of a Berber village in the Sahara to a Hopi pueblo, was incidentally considered.

Views were shown of oriental rock temples, the most striking of which were those of the rock city, Petra, in Syria, which was characterized as the most exceptional cliff ruin in the world.

THE 447th regular meeting of the Anthropological Society, held April 26, 1910, was also its 31st annual meeting.

The meeting opened with reading of the minutes of last year's annual meeting. The secretary then read a report of the activities of the society during the last session which, briefly stated, was as follows: The society held fourteen meetings with an average attendance of 64 members and guests. At these meetings twenty papers were presented by sixteen contributors.

The president, Dr. J. Walter Fewkes, commemorated in a few appropriate words the members of the society who during last session departed this life, viz., Professor Enrico Giglioli, of the Museum of Florence, Italy, who has been an honorary member, and Professor Simon Newcomb and Mr. W. C. Whittemore, active members.

The society then proceeded to the election of officers, which resulted as follows:

*President*—J. Walter Fewkes.

*Vice-president*—George R. Stetson.

*Secretary*—I. M. Casanowicz.

*Treasurer*—George C. Maynard.

*Additional members of the Board of Managers* (besides the former presidents of the society, who are *ex officio* permanent members of the board)—William H. Babcock, J. N. B. Hewitt, David Hutcheson, Edwin L. Morgan, John R. Swanton.

I. M. CASANOWICZ,  
Secretary

THE MICHIGAN ACADEMY OF SCIENCE  
SECTION OF ZOOLOGY

THE regular meetings of the section were held March 31 and April 1, 1910, at the University of Michigan. The following papers were read:

"Notes on Michigan Reptiles and Amphibia, II.," A. G. Ruthven.

"Some New Light on the Development of Reptilia," E. C. Case.

"Variation in *Lymnaea reflexa* Say, from Huron County," H. Burrington Baker.

"The Crustacea of Michigan," A. S. Pearse.

"Preliminary Report on the Anatomy of *Physa gyrina* Say," H. Burrington Baker.

"Notes on the Distribution of the Unionidae of North America," Bryant Walker.

"Regeneration in the Nerves of *Cambarus*," H. M. MacCurdy.

"A Contribution to the Theory of Binuclearity" (lantern slides), R. W. Hegner.

"The Origin and Meaning of the Second Polar Body," Chas. R. Barr.

"On Two Abnormalities in the Crayfish," Lucia Harmon.

"The Rotary Power of Extracts of the Bodies of Snails," Elliot R. Downing.

"The Formation of Habit at High Speed," O. C. Glaser.

"Notes on some of the Rarer Species of Michigan Birds," Walter B. Barrows.

"Methods of Photographing Birds" (lantern slides), R. W. Hegner.

"A Simple Cooling Device for Use with the Microtome," O. C. Glaser.

"A Word on Double Embryos," O. C. Glaser.

"The Theory of Mimicry" (lantern slides), Jacob Reighard.

"The Pearl Organs of American Minnows in their Relation to the Factors of Descent" (lantern slides), Jacob Reighard.

"Some Methods of Studying Vision in Fishes, with Demonstration of Apparatus," Crystal Thompson and Mary Axt.

"A Remedy for the Black Fly Pest in the Southern Peninsula of Michigan," Cora D. Reeves.

"Experiments on the Role Played by Odors in Determining the Behavior of Bees," Max Peet.

"Mimicry in *Tabanus atratus*," S. D. Niagers.

"The Mendelian Law Demonstrated by the Domestic Fowls," S. D. Magers.

R. W. HEGNER,  
Secretary

ANN ARBOR, MICH.



*Am. Anthropologist, Vol. 12, no. 3. July-Sept. 1910.*

## THE CAVE DWELLINGS OF THE OLD AND NEW WORLDS

By J. WALTER FEWKES

IN considering many subjects suitable for a presidential address that of "The Cave Dwellings of the Old and New Worlds"<sup>1</sup> has seemed to me timely as illustrating certain aspects of culture history that are only vaguely comprehended by those unfamiliar with our science, and often overlooked by professional anthropologists. The subject enables me to call attention to the intimate connection existing between history and geography, and to lay before you data bearing on the theory that culture similarities in distant lands are due not so much to derivation as to a mental unity on account of which human thoughts are similarly affected by a like environment. This subject also brings into relief significant limitations of the theory that culture development is due wholly to external conditions, while the data here presented show the existence of diversities in culture which have apparently no relation to those conditions.

There is nothing produced by the human mind and hand that reflects individual and racial characters more accurately than man's habitations. It is a far-reaching ethnological law that the house is the most truthful expression of the mind of the inhabitant; natural man in constructing his dwellings must avail himself of the material which is nearest at hand for that purpose.

It is convenient for purposes of study to consider human habitations as arranged in two series which are not necessarily local lines of evolution: houses of wood including those of sticks, bark, grass, hides, and those of stone embracing earth, clay, and the like. Our subject is especially concerned with the origin and development of the latter. The simplest kind of durable house or shelter is the cave, the choice of which for habitation generally leads ulti-

<sup>1</sup> Presidential address delivered before the Anthropological Society of Washington, April 12, 1910. This address was accompanied by stereopticon views illustrating many of the points presented, which cannot be reproduced as illustrations.



a form that is clearly recognizable. It has been found by me wherever I have observed Filipinos and is one of the three fundamental types of the islands.

The origin of the three types is not entirely clear. There can be no doubt that the Iberian is the same as the Mediterranean race of Sergi, derived originally from Europe. The Primitive has a wide range of distribution according to Hagen, being found in South America, Africa, the Pacific islands, and on the mainland of Asia. Wherever found it has associated with it a type resembling the Australoid, therefore the two may have originated together. If they did not, they have at least drifted together over the world and are found together at present over a large extent of the earth's surface. The Australoid type is a large element in the composition of the negro people, judging from observations on many hundreds of American negroes.

The following conclusions are tentatively made from observations of Europeans, Filipinos, and negroes. The Iberian is the fundamental European type, but modified Primitive and Australoid types may be found among Europeans besides the composite types, such as the Alpine, B.B.B., etc. The Australoid is the fundamental negroid type, but a great many Iberian and Primitive forms are found among negroes, and the composite types are also present. The Primitive is the fundamental type of the Orient and of the Pacific peoples, but both Iberian and Australoid as well as the composite types are to be found there. Among Europeans the other types resemble the Iberian; among negroes the other types resemble the Australoid; and among Orientals the other types resemble the Primitive.

The composition of any group of people, large or small, depends on the relative proportions of each type that entered into the composition of the group, the time during which the types have been in contact, the conditions of food, water, air, habits, etc., and other factors. There is no evidence that any type of man that ever existed has disappeared entirely, although there is evidence that the types have become somewhat modified in different parts of the world.

TULANE UNIVERSITY,  
NEW ORLEANS, LA.

mately into permanent structures. The cave as an element in the history of human habitation is conditioned in its influence by its geographical extension.

You may have noticed that I have spoken of the intimate connection of history and geography, and it may be added that in using the former term I include in it both ethnology and archeology. It seems to me that the time is coming when the science of history will no longer be made up solely of descriptions of past events, even when including within its ken economics and institutions, but will embrace a study of cultural life in its broadest significance. The time is not far distant when the discoveries of the ethnographer will enlarge the scope of history, so that this science will embrace all forms of culture, among all men, both low and high in development. Ethnology is destined to infuse into history a meaning more comprehensive than it has yet had and to bring into sharper relief the relation of cultural life and geographical surroundings.

Human thought, as expressed by material culture, language, and beliefs, is modified to a certain extent by survivals of past environments. In early conditions this modification was strong, but later, when man had obtained greater control over his surroundings, external conditions lost some of their power. The character of primitive habitations is perhaps more influenced by environment than any other product of man's intelligence, but even in them we find surviving traces of former conditions.<sup>1</sup> The effect which the adoption of caves as habitations has had on the construction of buildings within them illustrates this statement. Originally caves were sought out for protection from elements, but in the course of time, possibly from conservatism, man continued to construct buildings in caves and to live in caverns long after necessity for them had ceased. The fact that nothing of man's manufacture is more profoundly modified by environment than his habitation, gives to caves or cave-dwellings a great importance in the study of the interrelations of history and geography.

The reason that led man originally to seek caves for habitation was a desire for shelter from the elements, but not so much protec-

<sup>1</sup> The effect of migration and retention of cultural survivals of former environments should not be overlooked although as time passes it becomes more and more obscure.



tion for himself as for others—for his offspring. Caves were early used for the hiding away of food and secretion of other property, as sacred images and ceremonial paraphernalia, for burial places, and as chambers for the performance of sacred rites. Their use for habitation was secondary, the primary motive being mainly altruistic, the same as that which leads the insect, bird, and mammal to make their nests.

As one of the few crafts man shares with animals is the building habit, it is natural for us, on the very threshold of the subject, to consider the influence of environment on lower intelligences as expressed by insects, birds, mammals; or perhaps it might be better to say, the study of the habitations of lower animals should go hand in hand with those of natural man.<sup>1</sup> We are immediately informed that the bird acts not from reason but from inherited habit or instinct. The first swallows which built under the eaves of a house or in a chimney of the same surely had no inherited instinct to guide them. This choice was certainly not due to former teaching, in the site that has been inherited but to an independent use of mind which recognized the advantage of a new environmental condition. It does not seem unreasonable to suppose that the birds that first built their nests under overhanging cliffs did so for the same reason that men built in similar places. Both bird and man saw that the caves were advantageous for shelter and built accordingly.

The cave-swallow builds its nest of available material as stones, clay and twigs. I possess a photograph showing one of these animal cliff-dwellings which indicates how close a parallelism can be

<sup>1</sup> This great "untilled field of comparative psychology," as pointed out by a reviewer, in *The Athenaeum* (Aug. 20, 1910), of Dr H. C. McCook's *Ant Communities and how they are Governed*, "will be extended from the primitive human type to the conceptions of other animals, but zoologists must find the materials." Although somewhat foreign to my subject the following comment by Dr Cook on the discovery of a story in an ant's nest eight feet deep is instructive:

"Those who are curious in such comparisons might find grounds here for a striking parallel between the achievement of an ant three-eighths of an inch high (long) and of a man one hundred and seventy-six times as high (five and one-half feet). Were we to reckon on a proportionate rate of progress between the two on the basis of height, our man would have to be credited with a storied structure one thousand four hundred and eight feet deep."

traced in the choice of a site and material for a building by animals and man as determined by their environment—a most fascinating subject to which I can give only brief mention at this time. The outcome of the comparison is that there appears to be a general psychic law showing identity of thought among animals and men in the construction of buildings or nests where available material and geographical conditions are the same.

Life in caves passes naturally into one in permanent houses of stone or clay. If we follow Ratsel in his conclusion that "the germ of stone architecture" arose from "the habit of dwelling in caves widely spread in primitive times and not yet obsolete," then the geographical distribution of caves has largely determined the sites of monument development and consequently of civilization. The effect of stone buildings made by one generation on development of the culture in the next and subsequent generations is very considerable, and the perpetual existence of monuments is a continual stimulus acting on the mind to interest it in past history and create a pride in former achievements. It is self evident that a race, each generation of which builds houses of perishable material, leaves little evidence of its past history and whenever the creations of one generation fall into decay in the next there remains nothing to which tradition may point with pride. If the past adds nothing to the present a race progress is not possible. Stone habitations become monuments and endure, not only serving as an inspiration for new endeavor but also securing lasting models for future generations. It is on these accounts that the limits of artificial cave habitations are almost always the same as those of higher human culture, historic and prehistoric.<sup>1</sup>

Caves showing evidences of habitations are widely distributed geographically. Beginning with China a belt of cave-dwellings extends across India to Asia Minor and Arabia following both shores of the Mediterranean, continuing into the Canary Islands, the West Indies, Mexico, North and South America. Wherever geological conditions furnish a rock that can readily be worked into suitable caves there are generally found ruins of stone buildings,

<sup>1</sup> Higher culture without permanent habitations or sacred edifices is almost inconceivable.



and where these exist there we are almost sure to see other evidences of past culture.

Two lines of architectural evolution reach back to the cave as the original form: (1) growth of a building within a natural cave, and (2) evolution of a building from an artificial cave. While natural caves must theoretically have formed the earlier shelter, we find, when the character of the rock permits, that artificial caves were constructed almost contemporaneously with them.

The use of unmodified natural caverns for shelter cannot be considered at length at this time, but in passing it may be pointed out that, while not limited to any one geographical location or climatic condition, they are necessarily found under certain geological conditions. Existing historical, legendary, and archeological accounts<sup>1</sup> of human habitations in natural caves of Europe are very numerous, but no extensive literature exists on the natural cave-man of Asia, Africa, and America. The association of human remains with those of extinct animals in European caves carries the antiquity of man into late geological formations. The limited observations on New World caves rather than the poverty of the subject makes it difficult, almost impossible in fact, to institute an adequate comparison of the culture or relative age of the natural cave-man of America and Europe.

In order to show how little work has been done on this subject in America, let me call your attention to one of many examples. At the close of the fifteenth century when Columbus discovered America there were cave-dwellers in certain regions of the West Indies, which were mentioned in the writings of early historians. The people who inhabited the greater part of these islands were dwellers in the open and had attained a considerable cultural elevation as shown in the polished stone objects called "collars" and three-pointed idols or zemis. The germ of this culture came from South America. In addition there were settlements of Caribs who had migrated northward from South America along the Lesser Antilles as far as Vieques island and the eastern shore of Porto Rico. It would appear from history that there were at least three distinct stocks, indicating

<sup>1</sup> Wm. Boyd Dawkins, *Cave Hunting: Researches on the Evidence of Caves Respecting the Early Inhabitants of Europe*, London, 1874.

three kinds of culture, in the West Indies at the epoch of discovery. The first and most primitive of these three were the cave-dwellers, remnants of an aboriginal people once spread all over the West Indies, but at that time inhabiting the western ends of Cuba and Hayti. They were known to early writers as the Guanahatibibes,<sup>1</sup> and were said to have been low in cultural development, possessing a characteristic idiom, their livelihood being obtained by fishing, hunting, or gathering wild fruits or roots. These apparently had not yet become an agricultural people, and had no knowledge of how to prepare cassava from the poisonous root of the yuca.

The existence of this race of natural cave-dwellers in the West Indies has long been known through legends extant since the time of Columbus. Roman Pane, the oldest folk-lorist of the American Indians, in one of the legends of the natives of Hayti refers incidentally to their former life in caves—a legend which was no doubt founded on historical fact. It is known that some of the Haytian caves were inhabited by man at the discovery of the island, and we may infer that these troglodytes were survivals of an antecedent epoch, referred to in the legend, when the aborigines of the island were cave-dwellers.

While, as seen from the above remarks, evidence drawn from folk-lore supports history, the archeological verification has yet to be gathered. Our knowledge of the character of the West Indian cave-culture is fragmentary and can be greatly enlarged by systematic excavation of the caves of Cuba, Hayti, and Porto Rico. Skeletal remains which may be referred to the cave-men of Cuba have been investigated by several Cuban anthropologists, who have regarded them as among the oldest in America. A comparison of the culture of these cave-men with those of Europe would be very instructive but it is manifestly impossible considering our limited knowledge of the former. Here is an opportunity for the study of cave-men at our very door, practically within our domain, which

<sup>1</sup> In western Cuba: their province in Hayti was called Gaucarima. The structures called "cacimbas" in the Isle of Pines and elsewhere in western Cuba may have been made by the prehistoric cave-dwellers of Cuba. These cacimbas are large earthen jars, apparently fashioned and baked in place, filling a hole six feet deep, with rim level with the surface of the ground. Additional study is necessary to determine their age and use.



offers a most fascinating field rich with harvest to our historians, folk-lorists, and archeologists.<sup>1</sup>

A comparison of artificial caves and buildings constructed in natural caverns in the Old and New Worlds is much easier to make than that of the natural caves of the two hemispheres on account of the abundant known material. Both America and the Old World have an extensive literature of artificial caves used for habitations or natural caves sheltering buildings of size. Historically speaking we have little information regarding the life of man in artificial caves or in buildings in natural caverns in America, but this lack may be supplemented by the contributions of archeology, and our knowledge may be enriched by a study of the folklore<sup>2</sup> of the Pueblo Indians.

In addition to legends capable of verification by archeology, the Hopi also have others less definite which, although vague, are still as worthy of belief as those dealing with the period of history, if taken symbolically. Pueblo legends all agree that the human race originated in an underworld and climbed to the surface, where it now dwells, through an opening which the Hopi call "the Sipapû." A comparative study of these stories among different pueblos reveals the fact that this emergence opening does not always have the same position, creating doubts as to the authenticity of the location of Sipapû and raising a suspicion that geographically it is not to be taken literally but varies with the clan or larger group. Moreover the legend, greatly obscured by esoteric and symbolic interpretation, may indicate a local prehistoric event.<sup>3</sup> It is usual to interpret "the Sipapû" as the original orifice of emergence common to all members of the human race, but it is worth while to consider whether it does

<sup>1</sup> Mr J. N. B. Hewitt has also called my attention to the following legend on an old map by De l'Isle near what is now Williamsport, Pennsylvania: "les Tionontatecaga qui habitent dans des cavernes pour se deffendre de la grande chaleur."

<sup>2</sup> The legends of the life of some of the Hopi clans in the cliff houses of the Navaho National Monument, possibly vague as to the exact site of these cliff dwellings, are as vivid to them as their life in any historic ruin like Awatobi. These legends do not always refer to historic times, but often indicate the individual cliff-dwelling once inhabited by specific clans, as those in the Chelly canyon, which comes well into the historic period although not recorded in historical documents.

<sup>3</sup> Or the present conception of a universal Sipapû may have been a generalization from a purely local historical account of the passage of culture from the caves to the open.

not sometimes refer to the passage from a previous culture. If we interpret the underworld<sup>1</sup> to be a prehistoric underground habitation, we can bring several facts of archeology and ethnology to its support.

There can hardly be a doubt that the remote ancestor of the cliff-pueblo was an inhabitant of a natural cave, and that the construction of an artificial cave and a pit-dwelling was also early in time. As man developed into a mason<sup>2</sup> he outgrew the narrow bounds of a cavern and, erecting buildings in front of his artificial caves, relegated the latter to storage or ceremonial purposes, just as in certain places in Asia Minor caves are granaries and have houses in front of them which are inhabited.

Knowing as we do that early man in Europe inhabited natural caves the question naturally arises why there is a total absence in Europe of large villages like the great cliff-houses of Arizona and Colorado. This is partly due to the limited size of the caves, for there are no European caverns suitable or ample enough to contain large villages. The step from the cave-dwelling to the construction of stone buildings in the open was an early one and was probably brought about by overcrowding. After the population of the cave had outgrown its limits two remedies were possible for accommodation of the increase. Crowded out of caves by enlargement in numbers, man was forced either to build rooms in front of the caves he had excavated or, cutting free from the cliffs, to construct an independent house in the plain or on the mesa.

<sup>1</sup> The "pit-dwellings," or as they are sometimes designated "underground habitations," referred to throughout this lecture are allied to but not identical with cliff dwellings and pueblos. Cliff dwellings are of two kinds: cavate rooms or those artificially excavated in the walls of cliffs and cliff-houses, or cliff-pueblos, houses or pueblos with walls built in natural caves. There is of course no strict line of demarkation between these different types and some settlements are composites of two or more kinds of dwellings. The pit-dwellings belong to a distinct type of southwestern ruins, represented in cliff-dwellings and pueblos by the subterranean sacred room or kiva.

<sup>2</sup> The training of primitive man into a mason was rapid wherever rocks about him could be worked with rude implements. The excavation of caves led to stone buildings. No better illustration of the dependence of architecture on the character of rock can be found than by a comparison of the prehistoric monuments of Cuba and Yucatan. Easily worked rocks of the latter country made possible the magnificent temples that have been the wonder of archeologists.



It is not unlikely, also, that in some instances he first inhabited pit-dwellings or habitations under ground. Such simple dwellings as these were not unlike some ancient aboriginal habitations of California or the earth lodges in the plains east of the plateau region. If we regard the so-called cavate lodges and the pit-dwellings as primordial dwellings, much that is incomprehensible in cliff-dwelling architecture can be readily explained.

Although numerous examples of pit-dwellings in the Southwest may be mentioned, the Old Caves near Flagstaff, Arizona, are among the best representatives. A visitor on approaching one of these habitations first observes on top of an elevation broken down walls of one-storied rooms forming a cluster, the ground plan of which would not be unlike a checker board.<sup>1</sup> These walls, constructed of lava-blocks, gave to this cluster of rooms the appearance of a small one-storied pueblo, but on entering the enclosures one sees in the middle of each floor a vertical entrance through which the inhabitants descended to a subterranean chamber, excavated in the solid rock. This underground chamber was entered from lateral rooms by doorways which also had been excavated in the lava conglomerate. From the plastering on the walls of these rooms it is evident that they were not used simply for storage, but served for habitations and were true pit-dwellings.<sup>2</sup> Let us consider still another example of these early subterranean houses with vertical entrances inhabited by the aborigines of Arizona. Certain ruins on the Little Colorado have underground rooms that indicate even better than the Old Caves the character of pit-room culture antedating the free buildings called pueblos. Some of the best of these exist in considerable numbers in a cluster of ruins near the Black Falls of the Little Colorado. These rooms are underground, single, multiple, or arranged in rows, being generally found in the shelter of a low outcropping rock formation sometimes occurring at the base of a low cliff on top of which is a pueblo ruin. Their form is generally

<sup>1</sup> Similar walls forming an enclosure into which open the doorways of cave-dwellings are figured in a cut of Madeba, by Libbey and Hoskins, *The Jordan Valley and Petra*, Vol. I.

<sup>2</sup> I recognize in these pit-rooms the precursors of the subterranean kivas, the vertical entrance representing a hatchway.

round or they have rounded corners, one side being the cliff walls. A row of underground rooms of this type morphologically resembles a series of subterranean kivas. There is nothing to show that they were specialized for ceremonial purposes, but they are believed to belong to the type of subterranean dwelling called a "pit-room," of which the kiva is the modern survival.

Some of the Armenian cave-dwellings belong to that type of cavate house characterized by a vertical entrance. In the writings of Xenophon there is said to occur the following reference to these troglodytes visited by Polycrates and certain others of his command. "Their houses were underground with entrances like that of a well though they were spacious below. The entrances for the animals were dug out but the men descended by means of ladders. In these houses there were goats, cows, chickens, and the young of the same. The animals were fed on hay inside the houses which also held a store of wheat, barley, vegetables and barley-beer in great vessels."

As in certain Southwestern cavate houses some of the cave-villages of Asia Minor had a series of houses above ground which were occupied, and another series, subterranean in position, entered by tunnels, and advantageously situated for protection from foes. The use of the underground rooms as places of refuge, those in the open serving as habitations, may furnish a clue to the use of cavate rooms under or behind houses in prehistoric New Mexico and Arizona.

The Asiatic excavated rooms were used by their inhabitants for protection against Ibrahim Pasha, who with an Egyptian army in a campaign against Turkey came to a town of this character in Asia Minor. The people fled into their subterranean rooms, closing the entrance behind them by rolling great stones over the doorways,<sup>1</sup> so that the Egyptian soldiers could not force their way into these retreats. When the latter were sorely in need of water and lowered buckets to draw it up from the wells it is said the people underground cut the ropes, causing the soldiers to withdraw.

Doctor Ellsworth Huntington, in an interesting account of his

<sup>1</sup> The method of closing the doorway by rolling a great circular stone before it seems to have been common in the cave habitations of Asia Minor.



visit to certain Druse caves in Syria, published in *Harper's Magazine*, for April (1910), has shown how this was possible. It appears that these caves were safe retreats in time of danger, being in communication with houses above. He found in them remains of tanks from which water could be drawn by those in rooms above. It would not be possible to obtain water if there were hostile people in the caves below near the tanks.

The most instructive *résumé* of the dwellings of the aborigines of North America has been written by Herr Sarfert,<sup>1</sup> who has considered many points of interest to the student of subterranean or cave habitations. It would seem from his studies that underground habitations had a wide distribution in the New World in prehistoric times, and that there was a line of such, interrupted at intervals, extending from the Aleutian islands along the west coast of North America into Central America. The relation of the underground ceremonial room in California and the kiva in the pueblo region is not the least of many interesting suggestions in Herr Sarfert's article.

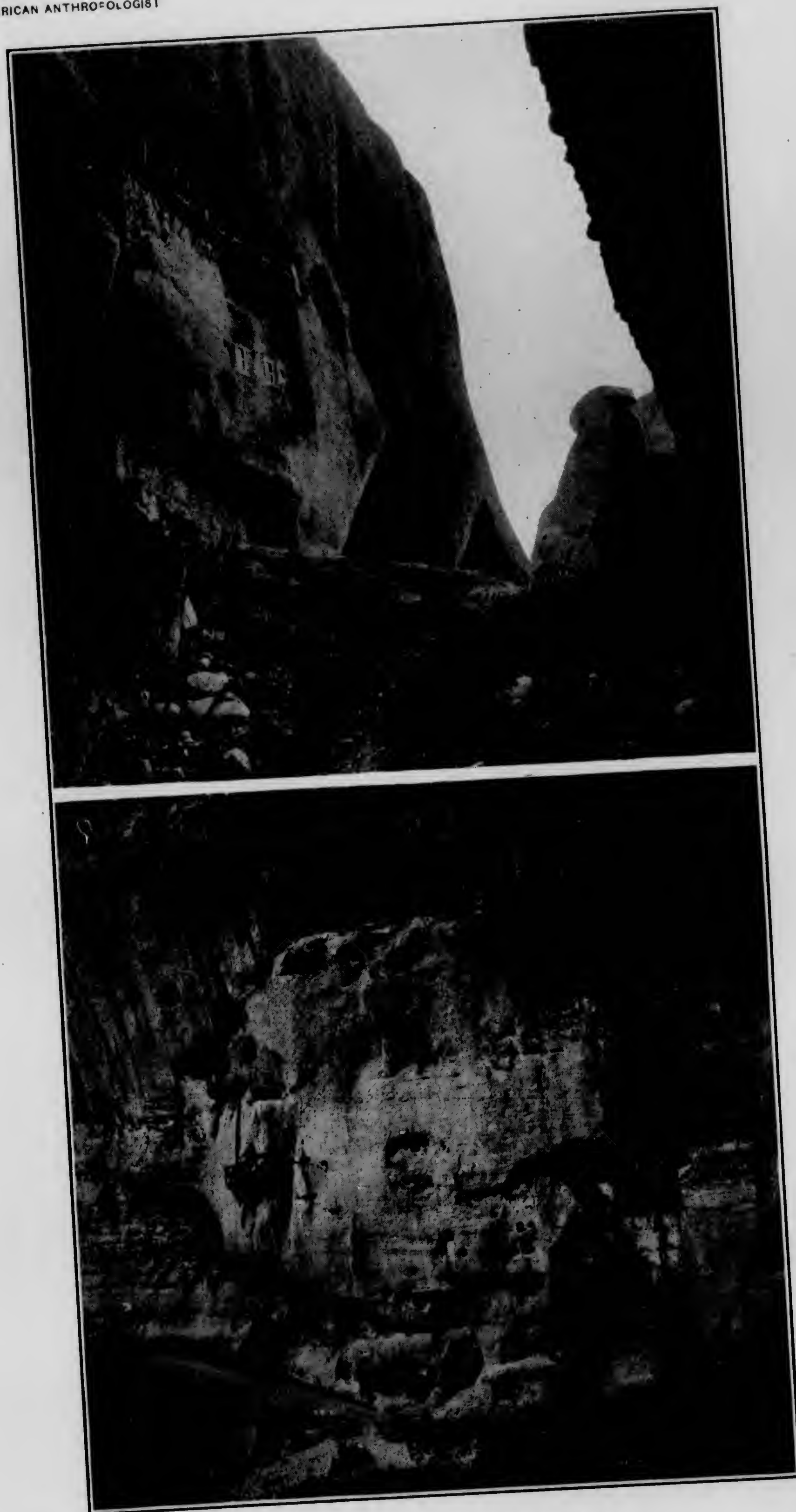
Cavate habitations in cliffs on Oak Creek, a tributary of the Verde, Arizona, correspond with caves used by Guanches for ceremonies and burials in the Canaries. Many similar examples from the Old and New Worlds might have been chosen, some with buildings before them, others destitute of the same. In many instances these former habitations have become burial chambers, once deserted by the inhabitants; they were used later as catacombs for the dead. Instances of this secondary use can be found all the way from China to the southwestern part of the United States.

These artificial caves are not confined to Asia and America but are also abundant in Europe. Many are found in Germany,<sup>2</sup> in France along the River Loire, where the older cave rooms now serve for storage, and new, occupied dwellings have been erected in front of them. The caves of Dordogne, France, have been studied and their contents figured and described in the magnificent

<sup>1</sup>Haus und Dorf bei den Eingeborenen Nordamerikas, *Archiv f. Anthropol.* xxv.

<sup>2</sup>See Lambert Karmer, *Künstliche Höhlen aus Alter Zeit*, Wien, 1903. The examples described are from Germany and America.





MONASTIC CLIFF-DWELLINGS, METEORA

work, *Reliquiae Aquitanicae* by Mm. Lartet and Cristy. The Aquitani of Cæsar's time lived in caves, and the caverns of Dordogne were inhabited in the Middle Ages. According to M. Desnoyers, writes Boyd Dawkins, "In France there are at the present time whole villages including the church to be found in the rocks which are merely caves modified, extended, and altered by the hand of man."

The so-called Heidenlöcher, Pagan-holes, at Goldback overlooking Lake Constance in South Germany may be taken as typical examples of certain European cave-dwellings excavated in the loess formation, recalling those in tufa along the Verde in Arizona. My attention was first called to these interesting caves by H. von Bayer who has given me an English translation from a German account published in the *Ueberlinger Badblatt* (nos. 6 and 7, Aug. 6, 22, 1910) and a short notice published in 1827 in Gustav Schwab's, *Der Bodensee nebst dem Rheinthal*. As these descriptions are too long to quote in my address I have introduced a condensed account embodying the main features of the two. These caves are excavated in a cliff rising perpendicular from the lake about 7 meters above the water level and were formerly approached by ladders from a narrow path that once skirted the shore.

"The Heidenlöcher formerly consisted of a series of rooms, chambers, cellars and niches connected with each other by hallways and stairs extending for a distance of almost a kilometer . . . The single rooms are of different sizes and shapes, some have groined arches or at least the beginning of them with the springers; others have flat ceilings, some have columns, pilasters, architraves and cornices; others are simple and without ornamentation. In nearly all of them, however, are to be found stone benches, niches, window and door openings with grooves cut out to receive the frames and even the remains of wooden dowels. In some places in the cliff are to be seen niches and rifts which no doubt are remains of a former cave-dwelling."

The present approach is by stone steps along the face of the cliff, the former stairs being badly disintegrated. There are now seven caves, a large number having been destroyed in 1846-48 when a road was constructed between Ueberlingen and Ludwigshafen. The first cave, entered by an arched doorway, is 3 meters high and has niches near the entrance. The second cave has two



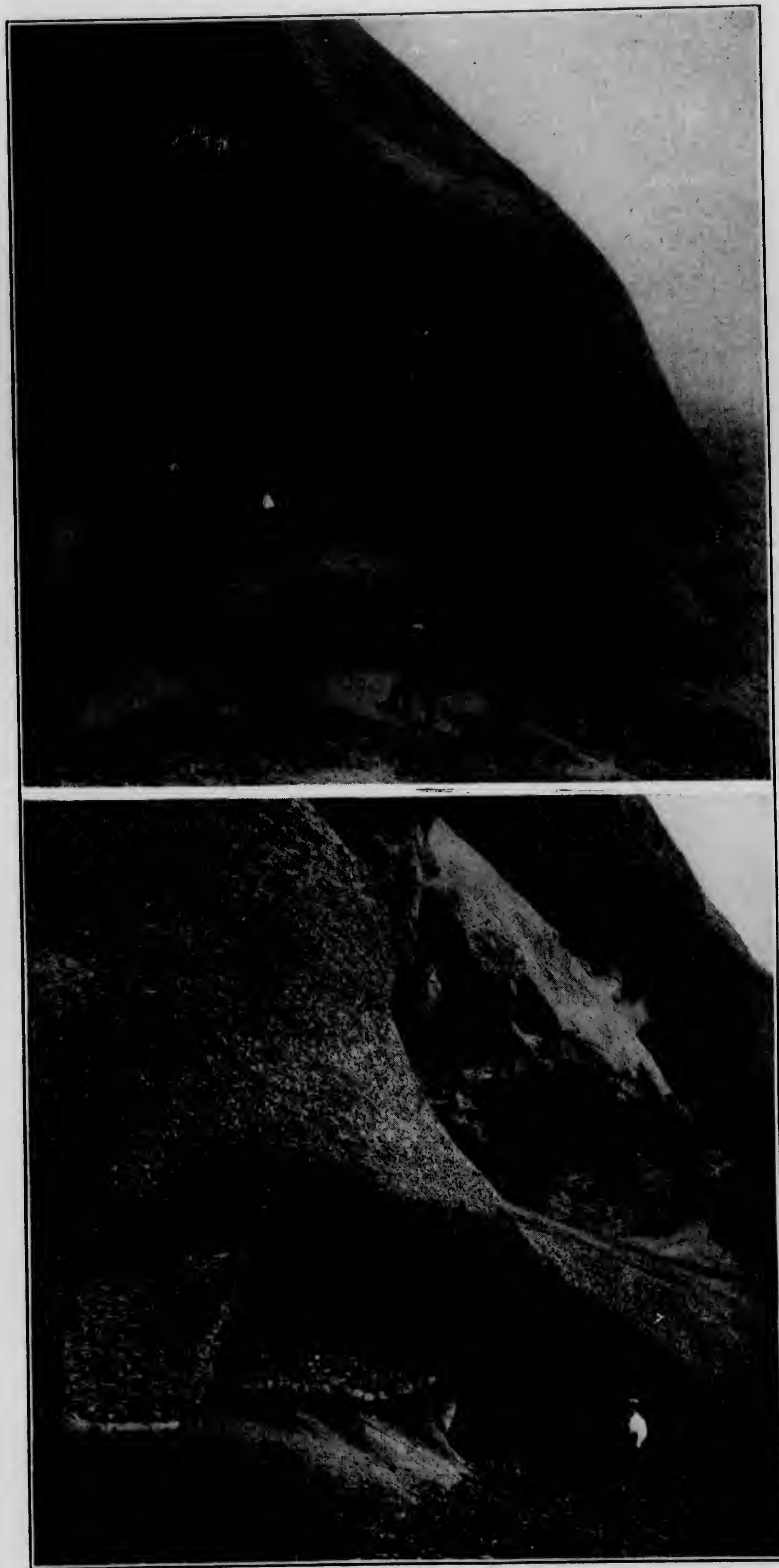
windows open and a chimney. A niche in this opens into a third cave 1.8 meters high and 2 meters wide. The fourth cave, over 2 meters high, has a groined ceiling and stone bench at the opening. On a lower level lies a cave called "the chapel" from which one descends 7 steps to a path which bifurcates, one branch leading to the open, the other to a fifth cave which has two stone columns in the middle, supporting gothic arches. Two additional caves with niches and benches are extended a few steps along the level of the meadow lands.

"Regarding the origin and purpose of these Heidenlöcher there is not the least historical information. No one knows who built them or lived in them, how old they are nor the purpose for which they were built. No chronicle nor historical record contains a single mention of them. Nothing has ever been found in the caves themselves which would aid in explaining them. In the family Beurer at Brunnensbach there figured for centuries as an heirloom a rare stone image which was found in the Heidenlöcher—a large piece of quartz, in form similar to a sitting man. This was perhaps of Celtic origin, for similar figures are frequently found in Gaelic graves; or, as others think, it may have represented 'God-father with the globe,' pointing to the former use of the Heidenlöcher by Christians. . . . The results of the various theories may be summed up as follows: Our Heidenlöcher were originally but few, simply caves dug in the rock, they were in time enlarged; multiplied, improved and embellished, and lastly treated with a sense of art; the small and simple ones are the oldest; they were the dwellings of the inhabitants of our region, first of the Celts, then the Suevians, the Romans and lastly the Allemanni; the name Heidenlöcher must be ascribed to the Romans."

The modern history of these heathen caves is interesting. "As early as 1760 the city council of Ueberlingen ordered the destruction of the major portion of these caves because of their general use by low tramps and vagabonds.

"When in 1846 to 1848 the new road was built between Ueberlingen and Ludwigshafer, a large portion of the Heidenlöcher cut in the cliff bordering on the lake was sacrificed. There are now only seven caves left of the former large number; they are visited annually by many tourists and are well cared for by the city as interesting relics of ancient times." Joseph V. Scheffel has chosen these caves as scenes for some of the incidents of *Ekkehard*, an interesting story laid in the tenth century.





CAVES WITH WICKER GRANARIES

We must not overlook in our studies underground dwellings in England or such structures as the chambered mound at New Grange in Ireland, which may be described as roofed subterranean chambers, counterparts of which are found in other parts of the world. Rooms of this kind somewhat different in structure appear in the megalithic underground habitations, "weems" or "Picts' houses" of Scotland, and the Hebrides, the pit-dwellings of Jesso, the subterranean rooms of the California Indians, and the "pit-rooms" in southern Arizona. Spain has many artificial caves that were once inhabited and those in full sight of the Alhambra in Grenada are still used by Spanish Gypsies. Some of the Andalusian caves figured and described by Sr. Gongora, in his valuable memoir, *Antiguedades Prehistoricas de Andalucia*, closely resemble those of the southwestern part of the United States. Many accounts might be quoted in which the Etruscan caves, largely mortuary, are described. The remains found in caves along the Riviera, as those near Montone, have been described by several archeologists.

To enumerate all varieties of artificial caves, pit-dwellings, and related forms of cliff dwellings would take me many hours—even a list of geographical locations where they occur would be of considerable size. I should not omit to mention the monastic establishments and chapels of the Crimea built in caves, and those of the rugged Thessalian mountains, views of which appear in plates XXIV and XXV.

Among the most interesting forms of Crimean troglodytic dwellings are those described by Prof. G. F. Wright in *Records of the Past* (vol. VI, part 1) near Bakhtci-Sarai, the crypts of Katchikalen and the "Valley of Jehoshaphat" (pl. XXVI). At the last mentioned locality there is a "promontory with precipitous faces on either side several hundred feet in height. The surface is covered by massive ancient ruins, while many passages lead down to extensive excavations with the windows open out upon the face of the precipice below."

Fergusson reports more than a thousand caves of architectural importance in the western part of India, and the cave-temples of Ellora may be regarded as the culmination of Braminic cave-architecture. There is a remarkable locality for the study of cave-



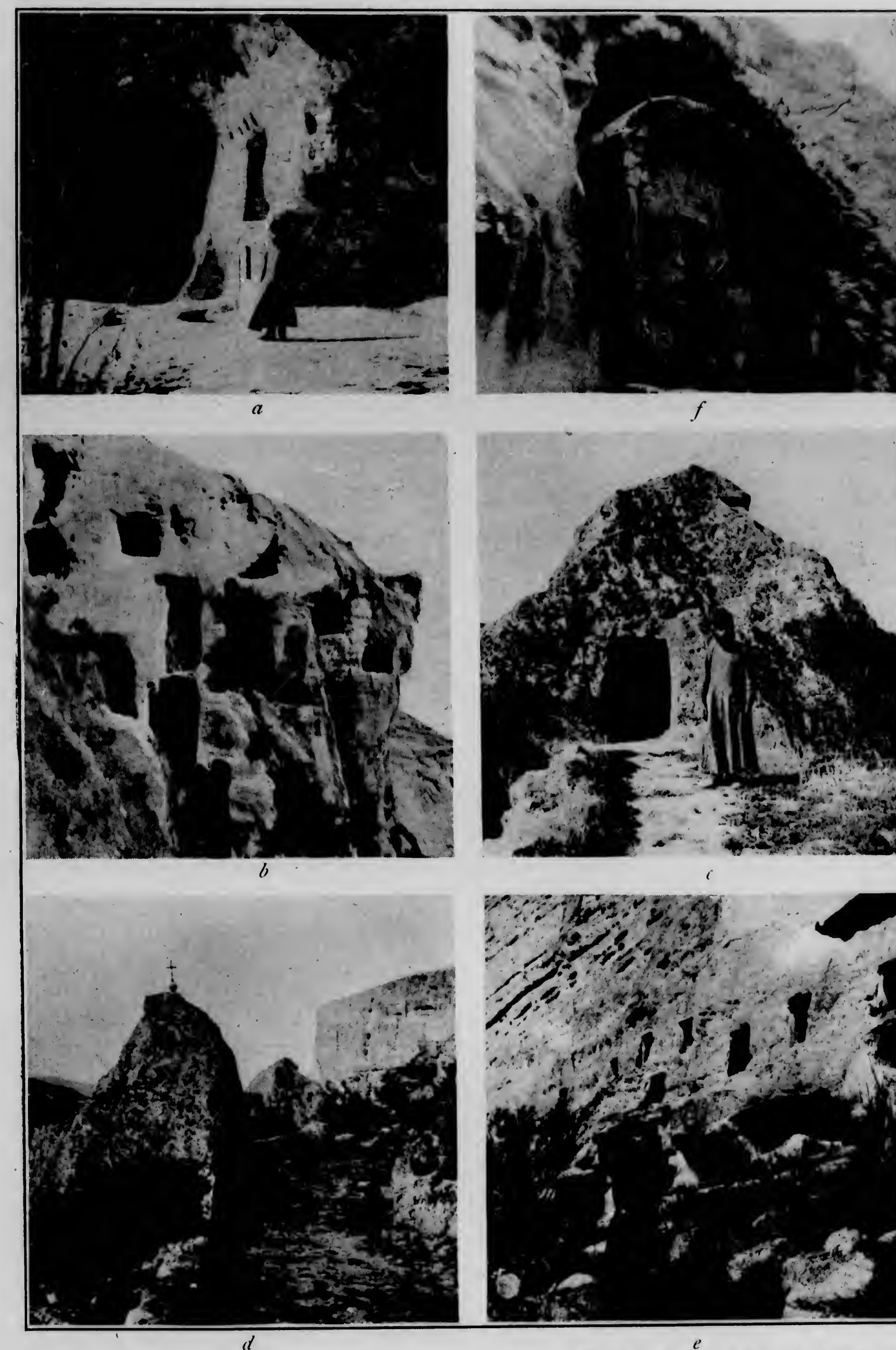
dwelling, called "The Thousand Caves," in the mountains of Koko-Nor in Cambodia. The loess formation in certain parts of China is fairly riddled with artificial habitations. Mr F. B. Wright has called my attention to caves of this kind at Shi-wan-tse, a place visited by him outside the Great Wall.

There might also be called to your mind the rooms inhabited by Greek priests, which have been excavated in large boulders, and inhabited natural caves in the Caucasus mountains; in some cases the cave mouth is filled in with an artificial wall, made of stones, reeds, or bamboo. I cannot do more than mention the cliff buildings of this kind reported from our possessions, the Philippines.

Certain climatic resemblances, between the oases of the Sahara, in northern Africa, and the deserts of the Southwest have brought about remarkable similarities in habitations. We have in the Sahara region extending from Egypt through Tunis, Tripoli, and Morocco to the west coast of Africa, a region of subterranean dwellings reproducing in appearances those common to the arid belt of the New World. It is instructive to note the similarity of these ancient Berber homes and certain Pueblo dwellings. It is perhaps more than a coincidence that we have coexisting among the former, as with the latter, two architectural forms, one above ground, the other below, the one a cliff and pit-dwelling, the other an independent village.

The character of Tunisian Berber towns can best be illustrated by a typical pit-habitation and town and for this comparison I have chosen Matmata and Medinine. The village of Matmata (Fig. 39), near Gabes, is certainly one of the most extraordinary underground settlements yet described.<sup>1</sup> As the visitor approaches it, we are told, he sees no sign of a village but only a number of cistern-like depressions in the earth, each measuring about 30 feet in diameter. But standing on the edge of one of these depressions and looking over the side into it what a strange sight meets his eyes. Deep in these sunken areas he sees the inhabitants, dogs, camels, and human beings. This depression is a breathing place or sunken plaza into which rooms open through lateral passageways, which are exca-

<sup>1</sup>Die Troglodyten des Matmata, von Paul Traeger. *Zeit. für Ethnologie*, 1906, p. 100.



Photographs from "Records of the Past."

a-c, CRIMEAN CLIFF-DWELLINGS; f, ROCK-TOMB, AMASIA, ASIA MINOR



ventions in the walls of the depression. Some of these chambers are adorned with rugs and furniture. The sunken plaza is apparently the living place, entrance to it being by means of a subterranean tunnel, slanting upward, large enough for passage of man or beast. The troglodytic people which inhabit these subterranean chambers now number 1200, and there is historical evidence that they have lived in these sunken pits for centuries. The court or

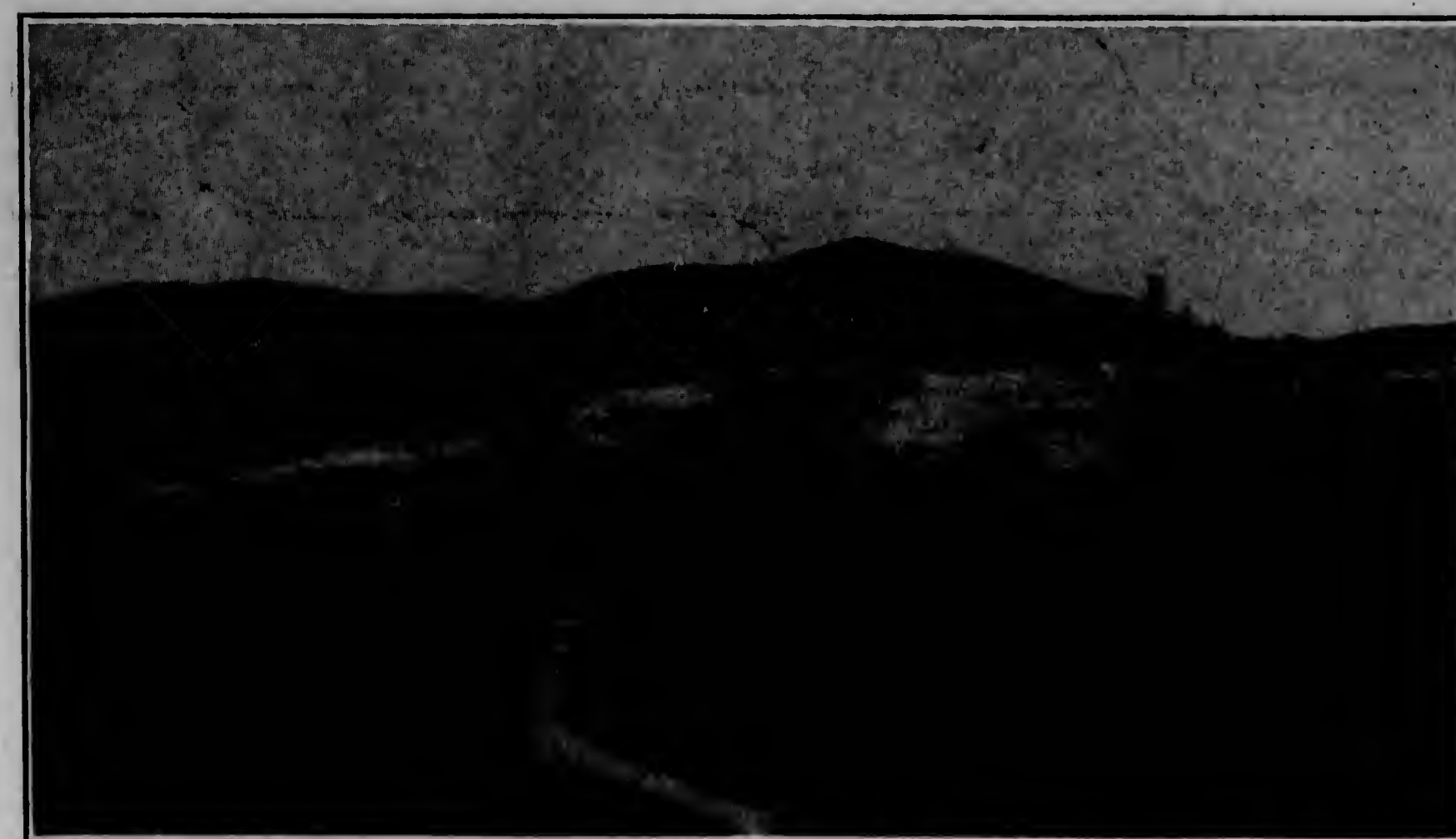


Fig. 39.—Matmata, Southern Tunis, Africa.

sunken area into which the different rooms open is a common gathering place for the inhabitants, in which most of the household work is performed, the excavated chambers being often arranged one above another, serving as the sleeping rooms.

There are several of these troglodytic towns in the arid deserts of Tunis, some of them wholly below the earth's surface while others are partly above ground. The reasons man has resorted to this subterranean life in this region are to escape from the torrid sun that fiercely beats down on the parched desert, and to obtain shelter from the rain and sand storms. A remarkable similarity between pueblos on the one side and another type of Tunisian town like Medinine on the other, is worthy of mention. Medinine, regarded by Hamy<sup>1</sup> as the Mapalia of Sallust, and probably the same

<sup>1</sup> *La Tunisie au debut du XX Siècle*, Paris, 1904.



as the troglodytic town mentioned by Strabo, according to Traeger, is composed of long, narrow rows of rooms destitute of windows, their doorways looking out on a common court. The rooms of this village, as shown by the doors, are built one above another, facing in the same general direction.

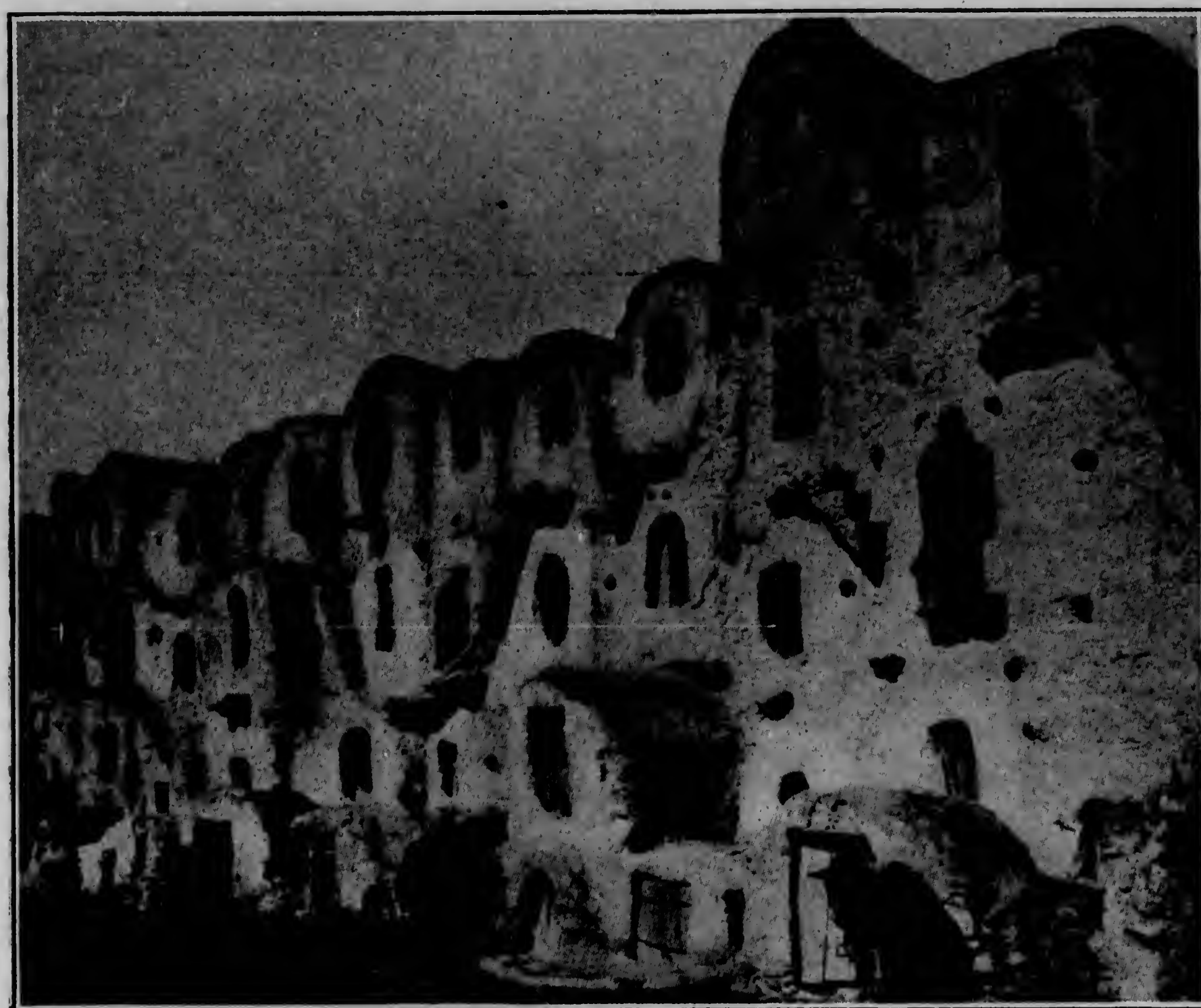


Fig. 40.—Medinine, Southern Tunis, Africa.

A comparison of the accompanying view of Medinine (fig. 40) and the Hopi pueblo, Oraibi, cannot fail to reveal to the observer general likenesses with special differences. The buildings are four or five stories high with lateral doorways at different levels. Of minor resemblances, visible in the figure, may be mentioned the steps, stairs, or other footrests by which one ascends from the ground to the upper rooms. The row of these last, seen near the standing human figure about half way up the side of the building, closely recalls similar projecting stones found in some of the cliff-dwellings in Arizona, Colorado, and New Mexico.

Traeger and Bruun have pointed out that a Saharan town like Medinine is architecturally an imitation in relief of the subterranean village, Matmata, one being above, the other underground. In the southwest there is a similar relation of the cave-dwelling and the pueblo built in the open.

The relative age of Matmata and Medinine, as representing the African troglodyte and a village in the open, may aid us in determining the relative age of the cliff-houses or rooms in artificial caves and the pueblos. Traeger regards the dwellings underground as constituting the older or the original form, and it would seem that the same is also true in the New World where there is evidence that the cavate rooms are older than the pueblos. The existence of several-storied dwellings in the Sahara and in our Southwest are explained as follows. The limited capacity of the caves in America had so crowded together the inhabitants that they were compelled to construct rooms one above another, a condition of congestion which survives in the pueblo. The multiple-storied Berber villages in the open have a pueblo form for the same reason.

The Tunisian pueblos are inhabited by the Berbers, an aboriginal people of North Africa, whose ancestors, there is every reason to believe, lived in similar habitations in the earliest historic times. In fact it is not impossible that the very people now inhabiting them are descendants of those who lived there in the time of Strabo or Sallust. It would appear that a residence for centuries in this peculiar form of dwelling may have led to certain habits of life which they share with our pueblos. It is foreign to the purpose of my address to enter into any intimate comparison of the culture of the sedentary prehistoric aborigines of the desert region of Africa with those of our Southwest, but it may not be out of place to state *en passant*, that there are deep-seated similarities in their customs, arts, and institutions, which are heritages of a cave life. Instructive parallels, for instance, might be detected in house ownership, matriarchal rights, and clan descent between the two. It would be strange if their ideas of building were not alike.

Today, as of old, the Berber tribes are distinct from the nomads and are reputed to live in stone-built, hill villages with two-storied



houses,<sup>1</sup> in marked contrast to the nomadic Arabs, who dwell in towns of tents. According to Ratzel in villages of the western Atlas "the greater part of the upper story consists of a sort of rough veranda ill suited to the severe climate of that mountain country. . . . The natives pass the winter in cellar-like vaults beneath the houses; and for the sake partly of warmth, partly of defense, the houses are built so close together that they often produce the impression of a village." This applies also to certain prehistoric Arizona house builders. It is not too great a stretch of the imagination to fancy that the former inhabitants of the Old Caves in the black lava hills that surround the San Francisco mountains near Flagstaff, and those<sup>2</sup> in the neighborhood of the Black Falls, Arizona, may also, like the Berbers of the Atlas mountains in Morocco, have retired in winter for warmth to their "cellar like vaults beneath their houses." They likewise built close together, partly for warmth, partly for defense.

But cliff dwellings in the Old and New Worlds are not always limited to arid climates although they are elsewhere used for warmth, or retreats from cold wintry blasts. The Eskimo villages at King island, in the Aleutians, is a noteworthy example of cliff dwellings overlooking the sea. This settlement, consisting of 40 dwellings, is literally lashed by cords to the side of a precipitous cliff, each habitation consisting of two chambers, an inner, partially excavated, and an outer constructed of poles or drift wood, the two communicating by a tunnel several feet in length. In the summer the hardy fishermen who inhabit this village live in the outer rooms which are little more than verandas but in winter they withdraw to the excavated rooms for protection from the cold sea breezes.

The student of archeology of our Pueblo region has reason to congratulate himself on being able to interpret both major and minor

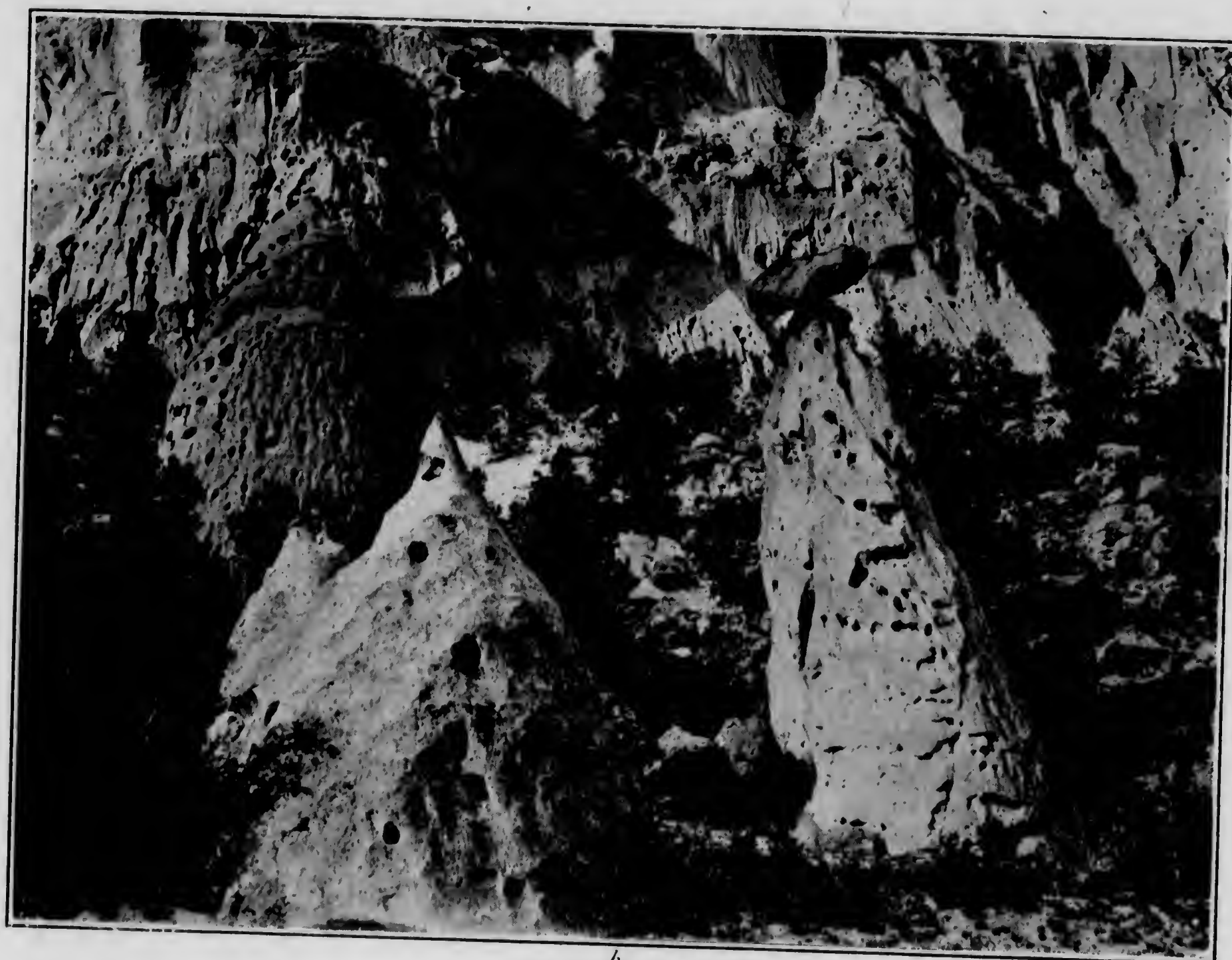
<sup>1</sup> The upper story of a Kabyle village is ordinarily added after the marriage of a son,

<sup>2</sup> The Navaho call the Hopi, whose ancestors according to legends probably lived in these ruins, the *Ayahhini*, people of (the kiva or) under-ground houses. (See the Franciscan Fathers of St. Michael, *An Ethnologic Dictionary of the Navaho Language*, p. 135. This name is especially applied to Walpi.) When this name was given them, before the present Walpi was built, the ancestors of the predominating clans of the Hopi may have been living in underground houses at Black Falls or elsewhere.





a



b

## CAVE DWELLINGS

a. Cone-dwelling, Mazaca, Cappadocia. Photograph from "Records of the Past." b. Cone-dwelling, Otowi Canyon, New Mexico. From Bull. 32, B. A. E., Photograph by Craycroft.

antiquities by ethnological data. It is a great help when Pueblo priests, descendants of the ancients, can serve as mentors in archeological research. The same may also be said of the archeologist who attempts a study of the past culture of the cave-men of Morocco and Algiers, always considered in the greater perspective of time. Unfortunately the archeology of the Berber region, prior to acculturation and influx of foreign tribes, is almost unknown. A knowledge of the cave-life of northern Africa, reaching as it does so far back in time, ought to aid us in comparison with more modern American cliff-dwellings.

It rarely happens that so close a likeness between cave-dwellings of the two hemispheres can be pointed out as in those found in Cappadocia and New Mexico. Perhaps the most striking types for comparison are the so-called "cone dwellings." None of the various cavate habitations of the Old World are more suggestive to the student of American cliff houses than those of the volcanic area west and southwest of Mt Argæus and Cæsarea<sup>1</sup> Mazaca, overlooking the Huyler and the valley of the Geureme in Cappadocia (pl. xxvii, a). Many, perhaps the majority, of these were the works of Christian monks dating from the time of St. Basil.

Many travelers have commented on resemblances in the geology of Syria, Palestine, and the arid regions of our Southwest. In some parts of Asia Minor we find the geological formations of Arizona so closely reproduced that one is amazed at the similarities. In one as in the other there are regions of volcanic tufa eroded into fantastic shapes. We should expect to find in countries, the geological features of which resemble each other so closely, a similarity in human habitations.

This resemblance is evident in the cone dwellings near Martchan and those of the Otowi, New Mexico (pl. xxvii, b). These cones are geologically considered the last stages in the erosion of tufaceous cliffs and as would be expected we find associated with them all stages from the massive wall to a conical structure sometimes capped with the harder lava rock which has preserved it. The whole region in the

<sup>1</sup> Cæsarea was the home of Basil, the founder of the Rule of St. Basil first accepted in Cappadocia, as far back as the 4th century, but others date back to a much earlier period.



neighborhood is volcanic in origin, and consists of a thick layer of tufa overlaid with lava which is comparatively thin. This tufa can be easily worked with primitive implements as stones or sticks; with a little patience chambers of any size could be excavated in it. Although some of the Asiatic excavations are 25 feet long by 13 feet wide, they might be made in a single month by one industrious workman.

In the past centuries the tufa has been eroded into deep canyons lined by cones often tipped by a lava cap 300 feet above the level of the canyon. In places the sides of these cones have been eroded, so as to expose the chambers in their interiors that are now used for drying grapes or other fruits. Ingress is generally by means of parallel holes arranged in rows which, when the sides have been worn away, are no longer visible. The rooms are commonly small, a fact that led the older writers on the troglodytes to speak of them as a dwarfish race, from which arose the supposition that the ancients knew of the race of pygmies in Africa. This supposition, that the cave dwellers are pygmies,<sup>1</sup> is world-wide in distribution, always due to the same cause — the small size of the excavated rooms. Thus, although many people believe that the former inhabitants of the cliff dwellings of Arizona were pygmies, as every tyro knows, skeletons that occur in them do not support this theory.

On entering one of these cone-dwellings of Cappadocia we find ourselves in a spacious chamber with shelves or niches excavated in the solid stone of the walls. The stairways resemble round tunnels through which one ascends to an upper story through holes like those lateral openings by which one enters the room. The floors separating the upper from the lower stories were usually thick enough to hold the weight that might rest on them, but occasionally these floors have given way and fallen to the floor below, thus

<sup>1</sup> The most ancient sedentary people of New Mexico, Arizona, and Colorado which preceded the Pueblos lived in caves or pit-rooms and practiced cremation. Their culture center was in the neighborhood of the Rio Grande. Another stock which also cremated their dead lived along the Gila and its tributaries. In early prehistoric times the Little Colorado valley from Zuni to the Great Colorado, including Hopi, was practically uninhabited by sedentary people. Later it was peopled by colonists from these two cultural centers, possibly a race largely composed of extra-Pueblo peoples that did not cremate the dead.

enlarging both rooms and forming a lofty chamber. In one instance nine stories were counted, but generally there are one, two, or four stories, their position appearing on the outside as small windows or peep-holes.

Many of the cave dwellers of Cappadocia have in front of the excavated rooms a portico later in construction than the room as indicated by Greek or Roman arches and columns. In the interior occur also evidences of later occupation showing Christian origin or Byzantine culture. The customs of the natives living near the caves of this region differ slightly from those of an ordinary Berber village.<sup>1</sup>

I ask your permission to depart a little from the trend of my address and to consider the antiquity of these Cappadocian cave-dwellings, many of which are no doubt comparatively modern monastic dwellings though others reach back to a remote antiquity. Sayce regards Cappadocia as the original home of the Hittites, considering that in the hieroglyphy of this ancient people "cones are used as ideographs for king and country." If this be true the cone dwellings of Cappadocia were known and perhaps inhabited at the epoch of Hittite supremacy or about 1900 B. C. Although these caves were probably inhabited before this remote time no one has assigned them an older date.

Diodorus, Strabo, and other early historians or geographers of antiquity have embodied in their writings an account of the troglodytes living on the coast of the Red Sea written by Agatharcides about 250 B. C. This account is instructive as perhaps the oldest known historic record of the culture of cave-dwellers. These troglodytes are described as a pastoral people, governed by chiefs who fought valiantly for their farms. "They made use of stone implements, spears, and arrows. Women always finally parted the combatants for their laws forbade a troglodyte to strike a woman. Their food consisted of meat of their herd, milk, and blood and of bones

<sup>1</sup> For this material I am partly indebted to an instructive article by Professor J. R. S. Sterrett in the *Century Magazine* for May, 1900, from which the statements here made are quoted. There is considerable general literature on the cave-dwellings of Cappadocia, one of the most accessible accounts being that in *Records of the Past*.



which were crushed and mixed with meat so as to form a kind of hash which was wrapped in raw untanned skins and roasted. Butchers were regarded as unclean persons. They slaughtered only old and sickly animals for food. They did not regard human beings as their ancestors but looked upon the cattle and sheep which furnished them food as their parents. They went nude or dressed in skins. Those who were too old to work committed suicide by hanging themselves by the neck to the tails of wild bulls, who dragged them to death. Cripples and those afflicted with incurable diseases were put to death. Herodotus says of the Ethiopian troglodytes that they were swift runners, fed on serpents and lizards, and had no real language but screeched like bats or twittered like birds."<sup>1</sup>

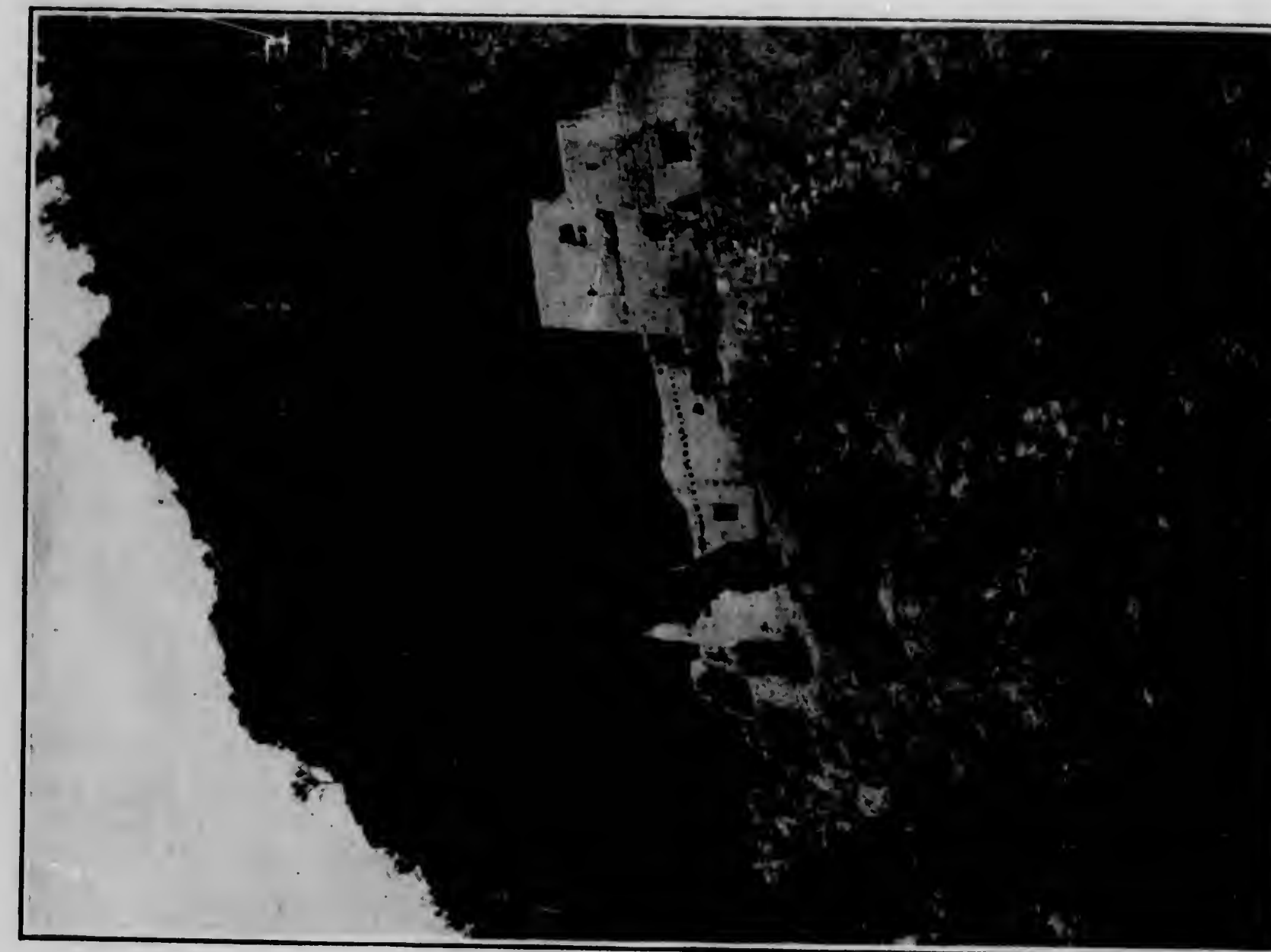
The highest form of cliff habitation in the New World is the cliff-pueblo which is practically a village built in a large natural cave. When the cliff-dwellers of Colorado had arrived at such perfection in masonry that they could construct a village like the Cliff Palace of the Mesa Verde National Park they had progressed far beyond the primitive cave-house. This was the highest and most characteristic American form of stone cliff-dwelling north of Mexico and its counterpart is not known in the Old World.

There are true cliff houses of this type in Asia as well as in America. The examples which have been chosen for illustration of this point are cliff-dwellings situated in Shansi the northern province of China (pl. xxviii, *a*). The cliff-temple of the Mienshan mountains, one of many in that region, lies in a great mountain cave which reminded Boerschmann<sup>2</sup> of the "Cave of Winds" behind Niagara Falls. Although there is no architectural resemblance between this temple and a cliff-dwelling in Arizona (pl. xxviii *b*), both are constructed under an over-

<sup>1</sup>It is instructive to note the evidences of totemism and matriarchial descent that crop out in the above account. If we regard the Berbers or Tibbus as the lineal descendants of the cliff-dwellers of North Africa, and the pueblos as living representatives of American cliff-dwellers, several other common characteristics can be traced to a common influence.

Dawkins says that "Dr. Livingstone alludes in his recent letters to the vast caves of Central Africa, which offer refuge to whole tribes with their cattle and household stuff."

<sup>2</sup>Ernst Boerschmann, *Architektur und Kulturstudien in China*, *Zeit. f. Ethnol.* 42. J. 3. 4. 1910. I am indebted to Herr Boerschmann for the use of his photograph of this temple.

*b*

CLIFF DWELLINGS

*a**a*. Chinese Cliff-temple in the Mienshan mountains, Shansi province. *b*. Cliff-dwelling, near Roosevelt Dam, Arizona.



hanging cliff and it is interesting to note that the country in which both occur is semi-arid. A necessity for shelter is not so evident in the Chinese cliff-houses as in Colorado, but the same thought is apparent in the choice of the sites of these cliff-houses. They show that in localities thousands of miles apart, where geological conditions favor the custom of constructing villages in natural caverns, there these structures have been found. It must be inferred, however, that, aside from the site occupied, the architectural features of the two are unlike although characteristic. The cliff-temples in the Shansi are thoroughly Chinese, the Colorado cliff dwellings are aboriginal American, a diversity pointing to an influence to which the cave is secondary, to some power which is stronger than the external influence in its effect on the forms of cliff-dwellings. While this power exerts itself strongly on the highest, it is not as potent on the lowest. The excavated caves of lower cultures in regions widely separated show closer resemblances than those made by more civilized men. The simpler the cultural life the closer its resemblance in different regions of the globe where environment is identical.

Another secondary use for caves which connects them with habitations and is found on both continents dating back to early times is their adoption for mortuary purposes. The cave originally built for a habitation in course of time is deserted by the living and becomes a burial place just as the subterranean cavern becomes a catacomb. This secondary use is connected with its adoption as a resort for priests, who would withdraw from the world for ceremonial or other reasons. The custom of burial in caves once established led to the construction of caves *de novo* for tombs and cave shrines, possibly temples, which latter are made difficult of access and isolated to add to their mysterious character. Ancestor worship and fear of the dead intensifies a feeling of awe, and other men are unwilling to enter caves which were once inhabited and now contain the dead.

Of many subjects connected with a comparative study of cave-dwellings in the Old and New Worlds a comparison of burial places and tombs of the two continents parallel with that of habitations



is one of the most instructive, but a consideration of this subject would manifestly enlarge my address to undue proportions.

Although examples of prehistoric tunnelling occur in several localities in the New World none of these can compare in extent with the subterranean passages of Syracuse in Sicily.

As in the Old World, so in the New, the cave is a resort for the priest who remains there to intercede with supernatural beings. As a place of burial it is sacred and in it at times are kept the sacred images and paraphernalia of worship. A fear of the cave due to superstition is not wholly confined to the Old World but is also found in the New. Neither Navaho nor Ute, successors of the cliff-house people, would enter the cliff-dwellings in early times before white men took the lead. Such an act would, they believed, bring direful ills as blindness or even death to any one who ventured within these old habitations.

As the cave life is probably older in the Old World than in the New so the cave dwelling of that continent is the most highly developed architecturally. Many of the rock temples of Egypt,—as the far famed rock-temple of Abu-simbel,—China, and India<sup>1</sup> are among the highest known examples of man's skill and expertness in rock cutting. Of all these none surpasses in interest and beauty the ancient far-famed cliff city of the Syrian deserts, called Petra.

Situated not far from an old caravan route across the desert from Damascus to Mecca and protected from nomadic marauders by its marvelous position, Petra has been occupied successively from most ancient times by Edomites, Phoenicians, Egyptians, and Romans, all of whom have left examples of their art in its rock-hewn temples and amphitheatres, shrines, and house walls. After passing through a narrow defile called the Sik whose perpendicular walls tower above on each side a visitor suddenly beholds the magnificent "Treasury of Ptolemy" cut on the side of the cliff. This beautiful temple, empty because without cave behind it, is but the beginning of a series of façades covering the high cliffs in the enlargement of the canyon at the base of which lies in ruins the fallen walls of buildings long ago deserted. As one studies

<sup>1</sup> Emil Schlagintweit, *Indien in Wort und Bild*, Leipzig, 1890. Fergusson and Burgess, *The Cave Temples of India*, London, 1888.

this greatest of all cliff cities<sup>1</sup> built by human hands in the variegated rocks of a Syrian desert he realizes the height cliff dwelling architecture long ago reached in the Old World, as a protection from foes by isolation. This ruin with all its wealth and beauty is connected with the desert and an arid climate, the same conditions which characterize its humble representatives in the New World.

I have sought for some explanation of the fact that the cliff-dwellings and pueblos built in caverns are confined to our Southwest and northern Mexico, and to the arid belt of Asia, Europe, and Africa. Why, for instance, is the distribution so circumscribed especially when we find evidences that man elsewhere, as in the West Indies, once lived in a previous stage in natural caverns. I am inclined to recognize here the most striking instance of the influence of environment and geological conditions. Nowhere else were there caves capacious enough, open to the air, and in many other ways suitable for the erection of dwellings. Other caverns are deeper, the limestone caves of the Alleghanies are more extensive, some of those of the West Indies as inaccessible, but the majority have narrow entrances and are otherwise unfitted for the development of cave dwellings.

A study of the cliff-dwellings of the Old and New Worlds while showing, on the one hand, that surroundings have exerted marked influences in history, reveals on the other the weakness of the position that human history is solely a product of environment. If we were dealing with organic structures alone and the mind of man were wholly subservient to them, cave-men throughout the world would have a greater uniformity in culture, but there is another factor in the case, there is the human mind and will with its powers of overcoming environment, and there is in man a strong desire for sociological and therefore institutional development. Man's mind, especially in the higher stages, is not altogether plastic to conditions; the desire to live in families, tribes, and other groupings, is strong enough to offset climate and physical conditions or to modify their

<sup>1</sup> Alois Musil, *Arabia Petraea*, Wien, 1907. Gustav Dalman Hermann, *Petra und seine Felsheiligtümer*, Leipzig, 1908. Wm. Libbey, Jr. and Franklin E. Hoskins, *The Jordan Valley and Petra*, New York, 1905. Also a popular account by the latter in the *Geographical Magazine*. See also *Scientific American*, 1909, et alii.



influences as man wishes. Animals also have gregarious instincts but these have not overcome environmental influence. Primitive man is also more or less subservient to it but civilized man rises above external conditions, creating for himself sociologic and institutional laws independent of his surroundings.

It is evident that while cave life has exerted a marked influence on natural man in the creation of the monumental habit of building and thus led to higher civilization, this habit is only one influence acting on human culture history. The higher culture of man is more complex and due to more complicated influences than this would imply. History is the result of external environment, geological and climatic, but this cause is not the only influence acting on man's mind through the centuries. Whether we approach our subject from the historical, the cultural, or the geographical side we can not overlook the psychic or mind element in culture. It is instructive to see how in different regions of the earth natural man has been similarly influenced by like environment in constructing habitations, that limited influence from its nature is not lasting although in a measure hereditary but it will ultimately be powerless. Similarities of cave-dwellings in widely separated geographical localities mean that the human mind in early conditions is practically the same everywhere, a principle that has the support of psychology. In later conditions the mind of the individual, while not necessarily superior to that of earlier times, enjoys the influence of accumulated survivals or the race inheritance of centuries of thought of other minds called culture.

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full of quartz geodes superficially reddish in color. The weathering out of the geodes gives to the face of this cliff a pitted appearance.

10. Gray dolomite..... 8 feet.

*Slope before second or middle cave zone.* Portions of this thin-bedded zone might be called a dolomitic sandstone as they are composed almost entirely of small, rounded to angular quartz grains with a dolomitic cement. The three inches of sandstone at the base



FIG. 31. — Near view of a cliff-dwelling showing its relation to the overhanging resistant zone (No. 2) and the pitted character of the latter.

of the upper foot contain concretions whose cement is mainly silica. The entire eight feet is very full of quartz geodes superficially reddish in color. The thin-bedded character and the comparatively easy loosening of the quartz grains cause this to weather back more rapidly than zone 9, but as it retreats less rapidly than bed 11 it produces a slope along which runs the path before the dwellings of the second cave zone.

11. Yellowish dolomite..... 5 feet.

*Second cave zone.* The basal foot is very full of concretions and weathers back more rapidly than the upper four feet, the two together forming this second persistent cave layer.

12. Yellowish dolomite..... 21 feet.

*Third resistant zone.* This consists of several distinct beds with

the lower half more resistant than the upper. Most of the zone is full of reddish quartz geodes. Four feet from the base is a layer of broad, flat, lens-like concretions an inch or more thick, consisting of small rounded quartz grains united by a cement partly dolomitic but mostly siliceous. Seven feet below the top is a three inch layer of gray sandstone, with a considerable amount of dolomitic cement; this weathers more rapidly than the remainder of the zone, but, protected as it is by the quite resistant and more heavily bedded uppermost seven feet, it may be considered as a part of this third resistant zone.

13. Gray limestone to yellowish dolomite..... 12.5 feet.

*Slope before upper or third cave zone.* The lowest eight feet is a soft gray limestone weathering back very rapidly so that it causes the stratum beneath to project as a platform. The next foot is full of concretions and weathers white, retreating more rapidly than the upper three and one half feet which is a harder, yellowish dolomite; this latter forms the base of the few low caves located here; in one instance noted this and the concretionary foot were weathered back with zone 15, forming quite a high cave.

14. Light gray dolomite..... 4 feet.

*Third cave zone.* The base is a one foot concretion bed; the entire layer is full of quartz geodes.

15. Yellowish gray dolomite..... 14 feet.

*Fourth resistant zone.* Two feet from the top is a six inch layer of pink sandstone composed of minute, rounded, quartz grains, held together by a dolomitic cement; and seven feet from the base is a similar brownish layer.

16. Grayish dolomite..... 20 feet.

This zone is composed of many distinct beds. The lowest foot, less dolomitic than the rest, weathers back more readily. The upper seventeen feet are quite light in color, the lower nine feet of which contain iron concretions ranging in diameter from one to seven and one half inches; these concretions consist of small rounded quartz grains held together with iron. Quartz grains are very abundant throughout this entire horizon.

17. Grayish limestone..... 38 feet.

This thickness of limestone is thin-bedded, and contains an



abundance of minute fragments of fossils and a small number of microscopic quartz grains. Nine feet above the base occur many large siliceous concretions.

18. Dolomite and limestone . . . . . 67 feet.

This thickness is an alternation of yellowish dolomite and gray to yellowish limestone; beginning at the base with dolomite the thicknesses are 3, 9, 8, 5, 11, 31 feet. Each of these weathers into thinner beds because of the varying amount of quartz grains and the apparently consequent greater or less degree of dolomitization. As a rule the limestones are full of minute fossils or fragments of fossils while the dolomites are barren; also the limestones contain very few quartz grains, while the dolomites enclose a considerable but varying number up to about 50 per cent. or more of the rock mass.

This zone 18 takes us to the top of the steeper portion of the canyon walls.

19. Gray to brown sandstone . . . . . 20 feet.

Sloping up from the top of the canyon walls proper to the wagon trail on the surface of the plateau occurs this 20 feet of thin bedded sandstones. This was not noted in a continuous exposure but occurs as a succession of ledges with the intermediate spaces of two or three inches covered with soil; this soil is probably underlain by more highly calcareous bands. This sandstone is solidified by a cement, partly ferrous, but mostly calcareous. The larger sand grains become more numerous in the topmost beds, the grains here averaging .2 mm. in diameter; these uppermost beds show cross bedding.

#### THE CLIFF-DWELLINGS AT WALNUT CANYON

It is in the cave-like groove formed by the erosion of the softer rock between two of these resistant beds that the cliff dwellings occur, the vast majority being about 150 feet from the bottom of the gorge. This long cave layer extending along the steep side of the canyon is divided into separate dwellings, usually with no connecting doors, by transverse walls built out from the back to the front of the cave.

One house of average size measured 15 feet in length, 10 feet in width or depth, and from 7 feet in height at the front to 4 feet at

back. The floor was made approximately level by filling in the down-sloping front part with mortar. The front of the house is an artificial wall two feet thick built of native rocks of varying sizes joined by a yellowish-brown mortar of rather coarse sand such as is found in the bottom of the canyon. The stones are laid with a somewhat rough, perhaps accidental, approximation at breaking joints and the wall is even and straight along both the inside and the outside surface. This front wall reaches from the floor to the overhanging ledge and is pierced at center by a door nine inches wide at base, which though now broken away above, was probably originally less than five feet high. Against the roofing-ledge directly over the door is a round hole of four inches diameter, apparently a smoke outlet. The transverse walls forming the ends of the house are similar in thickness and material to the front wall which they join at a right angle.

Only rarely was there noticed an opening leading from one house directly into the adjoining. In one case such a connection was effected by a hole three feet high by two feet wide, its top being a flat piece of wood with ends embedded in the wall extending beyond it on each side.

That the fire was built in one of the back corners of the house was evidenced by the soot on the adjoining walls and roof and the presence of charred corn cobs, bones, and bits of wood.

Fragments of pottery indicating vessels of many sizes and shapes from jars to platters are extremely abundant both in and about the houses, but especially on the slopes in front. These ancient tenement dwellers apparently found the narrow streets before their houses as great a convenience into which to throw waste as did the ancient Romans described by Juvenal; in either case the danger from falling pottery was probably at times very real.

The pottery is made of a coarse sandy clay. The most common ware is of a gray color with roughly geometric designs upon the outside in black; those of red and black are comparatively rare. Second in abundance is the type in which the coiled structure appears on the surface, the coils being pinched down with the fingers.

Occasionally flat stones with raised sides, probably for grinding corn, are found in the dwellings. Of three such stones noted, two were of red sandstone and one of lava. Arrow heads of black



obsidian and many chips of the same material were seen on the slopes before the houses.

On the cross-bedded sandstone in the base of the canyon, on the sides of a pot hole, was seen some pictorial writing quite similar to that in the petrified forest at Adamana and at Willow Springs.

A hundred yards back from the cliff and near the end of the upper trail are the ruins of a house. These consist of blocks of stones in low lines of irregular height, usually no more than a foot, but preserving the outline of the outside and the dividing walls. No two stones in place one above the other were noticed. The house is 14 feet wide and 36 feet long, extending in a north-south direction. It is divided into two parts, each 14 by 18 feet. A pine tree 67 inches in circumference at base now stands just within the southwest corner of the house. There is not much pottery around the house, but about 50 feet northeast of it the ground is covered with many such fragments among which were noted a few arrow heads and chips of obsidian.

Another house of one room about 9 by 9 feet was found about a third of a mile southwest of the forester's cabin. It is not so well preserved as the preceding, but the outlines of the walls can be made out. According to the resident forester at the canyon there are many such houses scattered over these uplands.

#### CLIFF-DWELLINGS OF OTHER LOCALITIES IN NORTHWESTERN ARIZONA

This feature of horizontal alternating soft and hard strata is constant over wide areas in Arizona, New Mexico, and Utah. But in most places water was too distant, erosion too rapid, or the resistant beds too thin to give either a cave of sufficient depth or the water to make it habitable. No dwellings were noted along the two trails traversed in the Grand canyon of the Colorado river, though a few caves of sufficient depth and height for habitation were noted.

In a small canyon cut into the eastern side of the Kaibab plateau, near House Rock ranch and opening upon the southern end of House Rock valley, several well preserved dwellings were found, as follows:

1. 30 feet above the bottom of the canyon. Semicircular with

floor flat, but roof and sides arching like a quadrant of a sphere. Diameter 8 feet, height from 0 to 1 foot in back, sloping up to 7 feet at the center of the semicircular entrance. On one side the encircling rock forms the bounding wall out to the edge of the slope, and on the opposite side a wall 5 feet long lay in ruins a foot high.

2. Nearly opposite 1 and worn out of the upper part of the same stratum. Apparently of same dimensions and shape, but with a wall built parallel to the front instead of at right angles as in 1. The wall now extends only half way across the front and judging by the straightness of its free edge never extended farther.

3. The largest cave of the three and that first seen on the left upon entering the canyon. The whole dwelling seems originally to have included nearly all the space under the huge cliff that extends about 30 feet in length and about 15 feet out over the eroded bed below. At the lower end of this 30-foot cave are the ruins of a wall extending from front to back. At the other end the cliff rock itself arches around in such a manner as to form the side wall; from this extends lengthwise a well preserved artificial wall extending to the roof; it is about 3 feet long by 3 feet high. Its free edge is comparatively straight and there are no ruins of a former extension; yet its present shape would offer but little protection.

Pottery fragments, bones, and burned stones were found.

It thus appears that the dwellings here could have been used only temporarily as none would have given sufficient protection for a permanent dwelling.

On the sides of Jacob's canyon upon the western side of the Kaibab plateau, and near its exit upon Kanab plateau, the upper Aubrey is very similar in bedding and lithology to that of Walnut canyon; the caves are, however, less pronounced and more like those of the Grand canyon. No dwellings were noted.

There are a few cliff dwellings in the upper Aubrey of the gorge cut into the western edge of the Uinkaret plateau at the Hurricane fault. This is just south of the village of Hurricane Bench, Utah.

#### CONCLUSIONS AND SUMMARY

In this semi-arid region the wind and also the great variations in temperature between night and day enter as factors in erosion, the



latter causing vertical shaling of such a very compact siliceous bed as the lowest foot of zone 8, the former carrying off the loosened, dry sand grains and thus presenting fresh surfaces to weathering agencies.

The rocks at the base of the Walnut canyon section are thick, cross-bedded, pure sandstones. These change suddenly into evenly bedded strata with much calcareous cement, though still sandstone, probably representing the transgression of the sea upon an area of sand dunes. The lime content increases through zone 3 and in zone 4 becomes a limestone, though a solution of this still leaves a small residue of microscopic quartz grains.

From here through 238 feet to the uppermost beds (zone 19) there is an alternation of limestones and dolomites many times repeated, but all enclosing a varying amount of rounded to angular, usually microscopic, quartz grains; it is notable that there is an almost complete absence of argillaceous material. Alternating with these strata, and occurring at intervals throughout the entire thickness of limestones are several thin bands of sandstones with a calcareous or dolomitic cement. The limestones usually consist almost entirely of small marine fossil fragments, and leave after solution in acid a very small residue of quartz grains; the dolomites, usually granular, and with few or no fossils, contain a varying amount of quartz grains, probably averaging 30 per cent. to 50 per cent. of many of the beds. It was thus seen that it was the more porous strata which became dolomitic, the purer, less porous limestones remaining free from dolomitization; but the pure sandstones vary in having either a calcareous or a dolomitic cement.

The uppermost beds of the section (zone 19,) are again a series of unfossiliferous sandstones like the base of the section, though less heavily bedded, and showing much less cross-bedding.

The 238 feet of calcareous beds lying between the cross-bedded sandstones at the bottom and top of the canyon walls are more heavily bedded in their lower portion, becoming quite thin-bedded towards the top. These rapidly alternating dolomites, limestones, and calcareous sandstones are quite variable in their resistance to weathering; the more resistant remain as ledges projecting out over the relatively softer undermining bed below until the weight becomes

too great for the bed to support when they break off and roll down into the gorge. Since the thinner resistant beds would break off through less undermining than the thicker it is naturally in the lower portion of these calcareous beds where the strata are more heavily bedded that the caves occur. There are here four quite thick resistant beds; the lowest one occurs a short distance above the cross-bedded sandstone and has no caves of habitable size beneath it, but it forms the basement upon which is developed the lowest cave zone, the most persistent of the three prominent zones, and the one containing the vast majority of the hundreds of cliff dwellings located in this portion of the canyon. The second resistant bed, the one capping and forming the roof of these caves is the most conspicuous stratum above the cross-bedded sandstone. The other two resistant beds though prominent features in the canyon walls are much less so than the second, and from here to the top of the gorge no single bed or union of beds is of sufficient thickness to protect caves deep enough for dwellings.

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## THE PRIMITIVE MALAY MARRIAGE LAW

By CHARLES SUMNER LOBINGIER

IN the evolution of the human marital status institutional writers<sup>1</sup> distinguish three stages, (1) wife capture, (2) purchase, and (3) mutual assent. These several stages while normally sequent may, nevertheless, be contemporaneous, not only as between peoples of different culture states, but even among the same people. Among the Moros of Mindanao, e. g., the first stage survives, but our earliest glimpse of most Malay tribes, at least in the Philippines, finds them in the second stage.

Not to mention the Negritos<sup>2</sup> and their cousins, the Bataks of Palawan, with both of whom outright purchase of the wife appears to be the rule, and who, though not Malay, have not improbably been influenced by the customs of their earliest neighbors; the Tagbanuas Apurahuans, a highly primitive Malay tribe of central Palawan, appear to be still in the purchase marriage epoch. As described by an observer who spent years on the island, the family of a suitor "according to its circumstances, will send to the family of the chosen one a ring of gold, silver, or copper, an unmistakable sign that the family begs the hand of the woman,"<sup>3</sup> and the fathers of the two will later "unanimously decide the conditions of the wedding and the quantity of the *bandi* which the family of the bride desires."<sup>4</sup> *Bandi* appears to be a general term for compensation, and we have, in the transaction thus described, all the essential preliminaries of the purchase marriage.

### THE TAGALOGS

Our earliest detailed information regarding the customs of this most conspicuous of the Malay tribes in Luzon, if not in the entire

<sup>1</sup> Howard, *Matrimonial Institutions*

<sup>2</sup> My authority as to the Negritos is Mr W. Huse Chapman of the Bureau of Education, who was at one time stationed among those of the Pampangan hills and knows their customs from personal observation. Cf. Reed, *The Negritos of Zambales*.

<sup>3</sup> Venturello, *Manners and Customs of the Palawan Tribes*, *Smithsonian Miscellaneous Collections*, vol. 48, pt. 4, pp. 548-9.

<sup>4</sup> *Ibid.*, 529.



DISCUSSION AND CORRESPONDENCE

IN RE JACOB'S CAVERN

Two entirely dissimilar modes of thought are manifest in Mr. Nelson's and my own discussion of the Jacob's Cavern finds (see *AMERICAN ANTHROPOLOGIST*, n.s., 30: 329, 1928). The results expressed in the Jacob's Cavern paper are the outcome of chemical, physical, and geological examination of the carved "mastodon" bone and the cavern deposits. Whether the conclusions reached are true or not is a minor consideration; they do not rest upon mere personal opinion. The methods employed are not inherently mysterious; they are described in detail so that they who wish may reproduce them or, if they are so constrained, draw other conclusions from the data presented.

There is little pertaining to the carved bone which an anthropologist or archaeologist is, by training, capable of handling. The effective approaches to this problem are indirect but susceptible of repetition by others possessing similar technique. Mr. Nelson's professed ability to discredit this "mastodon" bone is for this reason strongly questioned. He misconstrues the note at the back of the paper as an attempt to rehabilitate this carved bone; so far this bone has not required "rehabilitation"; it merely lacks extremely obvious and undisputed authenticity.

It is unfortunate that Mr. Nelson's careful labors in trenching Jacob's Cavern should have yielded such disappointing results but this is merely a part of the problem to be solved. His objections will again be answered in detail, however:

1. Admitted by all concerned.
2. The surviving bone was mineralized; this is shown by X-Ray photographs and specific gravity determination. Consider the possibility that the other carved bones and shell were not so preserved; they are reported to have disintegrated. The only other mineralized bone fragment so far found in this cavern was in the third layer.
3. Authorities pronounced the bone fragments from layer 3 as typical Late Pleistocene. Where does "Late Pleistocene" shade into "Recent"?
4. Why assume the bone to have been perforated for suspension? Also, is it not possible that at least one American type culture has escaped the notice of our diligent archaeologists?
5. The perforation in the carved bone can be attributed equally well to a tapered stone drill or a knife. In any case, the fabrication of such a perfora-



of Trustees of Phillips Academy, and to Dr. W. K. Moorehead and Dr. A. V. Kidder for the cordial hospitality extended to them at Andover.

## PROGRAM

Four general sessions of the A. A. A. were held. At the opening session the following papers were presented:

- Carleton S. Coon, Preliminary Report on the Riffians.  
 Walter B. Cline, Preliminary Report on the Inhabitants of Siwáh Oasis.  
 Leslie A. White, A Summary Report of Field Work at Acoma, N. M.  
 V. J. Fewkes, New Phases of the Palaeolithic Cultures of Moravia, Czecho-Slovakia.  
 W. K. Moorehead, Cooperation in America Archaeology.  
 E. W. Gifford, Kingship and the Family in Western Polynesia.  
 Ralph Linton, The Origins of Madagascar Culture.

The other meetings were devoted to symposia on the following subjects:

- (1) The Antiquity of Man in America. Chairman, R. B. Dixon.  
 Recent Finds near Folsom, N. M., F. H. H. Roberts.  
 The Archaeological Evidence as a Whole, N. C. Nelson.  
 The Evidence from Physical Types, H. L. Shapiro.  
 Geological Aspects, F. B. Loomis.  
 Palaeopathological Aspects, H. U. Williams.
- (2) Chronology and Culture-Sequence in America. Chairman, H. J. Spinden.  
 1. The Archaic Civilization; Its Extent and Significance.  
    A Neo-archaic Classification. S. K. Lothrop, G. Vaillant.  
 2. Extensions of the Maya Cultural Horizon. H. J. Spinden,  
    A. V. Kidder, J. A. Mason.  
 3. Cultural Succession in Peru. A. L. Kroeber.
- (3) The diffusion of Culture Traits. Chairman, Clark Wissler.  
 Diffusion in the Pacific Area, T. F. McIlwraith.  
 Diffusion in Archaeology, N. C. Nelson.  
 Diffusion in General, R. B. Dixon.

A. IRVING HALLOWELL, *Secretary*

tion would be difficult after mineralization; such a bone would probably be well protected from accumulation of foreign substances while in use; it was probably mineralized during a long (relatively) period of disuse. Again, why assume that the carved bone was ever carried suspended from a cord?

6. Why assume that the carved bone was ever subject to much wear or abuse?

7. The field of American archaeology perhaps may not be considered to have been thoroughly covered. Moorehead and Peabody found no carved bones and also found no mineralized bone fragments in Jacob's Cavern.

8. The cross-section of the carved bone, as usual with most bones, is roughly elliptical and also, as usual with most bones, almost all the weathering cracks are on the more sharply curving parts of the ellipse. The unknown artist had the amazing forethought to place his carvings upon the flatter part of the ellipse—probably because of the greater ease of carving. This may be the reason that most of the weathering cracks "miss" the carvings.

9. The color of the artificial incision surface is very similar to the color of the bone surface itself in a recent carving upon an old bone. The outer part of a bone is somewhat different in composition from the inner part of a bone and the same amount of weathering would be expected to give different results with two differing substances.

10. The bone is mineralized and mineralization preserves a bone quite well. The great difficulty of carving a mineralized bone leads to the thought that possibly the "mastodon" bone was carved before the bone was mineralized.

11. A broad statement from any but an expert in the carving of bones with flint tools. I, an amateur carver, made fair copies of the "mastodon" upon both an old bone and a green bone and the edges of the carvings are fairly sharp, especially in the case of the green bone. I used flint points from Jacob's Cavern and employed the scraping method.

Favorably situated stalagmites accessible to the outside air with its seasonal variation in dust content record the dusty season as a darker layer and the wet (or less dusty season) as a lighter layer. Such layers are not due

to the fact that the early cave occupants were thoughtful enough to sprinkle some kitchen refuse on their calendar.

The great amount of "kitchen refuse" in the upper part of the stalagmite interferes with the deciphering of the annual layers. The bottom part of the stalagmite is too complex to yield easily to counting its annual layers; traces of a "splash cup" are seen,—evidence of a period of much greater rainfall than today. Careful inspection shows, however, that annual layers are present in the bottom part of the stalagmite. The absence of the opportunity to count these layers leads to their calculation in the best way possible. The photograph



of the enlarged layers on page 311 of the Jacob's Cavern paper shows some half dozen consecutive, quite uniform, layers—rather regular, sporadic rainfall records. The means employed in the attempt to synchronize the Jacob's Cavern stalagmite growth curve and the California redwood growth curve are on record, and they who disagree are free to bring forth contrary evidence if they possess such. In an estimate or calculation of this type with its obvious difficulties it is just as well to say "1213 years" as "about 12 centuries" or to say "730 B.C." as "about the 8th century B.C." It avoids cluttering up the main theme and enables its more complete grasp. Such a device antagonizes only those who are gun-shy of any but vague generalizations.

The third layer is evidenced visually, physically, and chemically. Whether it is a catch basin marginal to a central mound of occupation material is a conjecture, the truth of which will only be known after the complete excavation of the cavern deposits in the presence of men capable of recognizing such things. The second layer indicated absence of cavern occupation (by man or other animal) by the absence of decomposed bone material. This second layer appears to have been a red clay layer probably washed down into the cavern through the sink-hole originally responsible for the formation of the cavern; this layer is in such quantity as to indicate a considerable period of time for its deposition or accumulation. Therefore, if such were the case, whatever the origin of the third layer, it was deposited before a period of moisture-fall greater than that of today and preceding the deposition of the ash layer in the cavern. And such a rainy season or period has not since occurred to wash the ash layer over to the edges of the cavern. And also this third layer yielded a piece of mineralized bone,—the only other such fragment found in the cavern was the "mastodon" bone.

The presence of the reduced iron and relatively large phosphorus content of layers 1 and 3 and their absence in layers 2 and 4 may be safely attributed to animal remains. The statement that this chemical composition can doubtless be explained in other ways shows a complete and active unfamiliarity with such matters. The presence of fire-burnt rock fragments in this third layer, 7 meters back from the front of the cavern, is not evidence against human occupation.

It has been the reported experience of those digging in Pleistocene deposits that practically all bones preserved are, at the moment of

discovery, surprisingly well preserved. But were all Pleistocene bones preserved?

The anthropologist examines and interprets evidence bearing on his problems. The chemist and physicist not only examines and interprets such evidence but also records this evidence so that others may examine and interpret at their leisure.

Two of the set of three bones examined photographically and physically are of the Virginia deer and from the left front leg (consensus of opinion of a number of authorities). No fresh left front leg bones of the Virginia deer were available for the third bone. The two bones which I carved were not treated with "hard oil" before impregnation with paraffin because when the "mastodon" bone was melted out of the paraffin block (in which it was embedded after the other carved bones and shell had disintegrated) by the present writer, in the presence of Dr. Clark Wissler, the layer of "hard oil" peeled off with the hot paraffin; apparently it had not penetrated the "mastodon" bone very far,—because the "mastodon" bone was mineralized.

The fairly old bone (bone A, from the bottom of the ash layer) is of the same color, under several definite wave lengths of light, as the "mastodon" bone; they must have an approximately similar past history.

Bone A contains a recent carving upon an old bone. Yet the incision surface of this carving contrasts much less with its bone surface than does the carving on bone B and bone B is also old. The carving on bone B is thus obviously not a recent carving. Recent three-color process photographs of the three carved bones (Agfa Farbenplatten) confirms the panchromatic plate results.

Let us hope that eventually Jacob's Cavern will be completely excavated under competent supervision. This was largely the reason for the publication of the Jacob's Cavern paper.

VERNON C. ALLISON

This discussion would seem to have reached its natural end. Additional comment on my part would add little of importance. The student who will read Dr. Allison's original paper and my criticism should be able to draw his own conclusions. In my judgment the chemical test has not proved the engravings on the Jacob's Cavern bone to be ancient; but even if it had done so, all the circumstances surrounding the discovery of this bone are such as to warrant placing



it forever in the list of doubtful evidence. As to what concerns the stalagmite and the chronology Dr. Allison rears upon it, there seems to be nothing left to say except that neither science nor history has anything to gain by pretending to objective and numerical determinations which have no real foundation in fact.

N. C. NELSON

#### A DANISH CONTRIBUTION TOWARDS THE COMPREHENSION OF ESKIMO CULTURE

More than two hundred years ago Denmark began her great work of colonization in Greenland and, in the years which have gone by since the landing of Hans Egede in 1721, the population of the country has passed through a development from Stone Age people to a mixed Danish-Eskimo race under forms which have undoubtedly been unique anywhere in the world. Behind all this work lies the respect of the Danes for the national culture of the Eskimo; for simultaneously with the establishment of the trading stations and the development of practical occupations for the benefit of the future of the Eskimo, not only have scientists, but also zealous officials, employed under the Colony management, shown such great interest in the prosperity of this great Arctic colony that one may point with pride to a literature which, describing land and people, dates right back to the very first years. The scientific expeditions which travelled about and described Greenland and the Greenlanders must in no way be underrated; but it must be acknowledged that their road was very often opened for them by those men who, through generations, lived in the country and were sympathetic towards the problems which in turn arose.

The Commission for the Direction of the Geological and Geographical Explorations in Greenland, which by means of its imposing series of publications has brought Danish Arctic exploration to the knowledge of countries abroad, has now sent out a *Dictionary of the West Greenland Eskimo Language*,<sup>1</sup> compiled by the well-known Greenlandic lecturer, Schultz-Lorentzen, who has spent almost a lifetime in North and South Greenland as a minister and seminary principal. This dictionary, which is the first completely compiled dictionary of an Eskimo dialect ever translated into English, supplies a long-felt want and therefore may claim some further mention.

The *Dictionary of the West Greenland Eskimo Language* is a some-

<sup>1</sup> Published by C. A. Reitzel, Copenhagen, in 1927.

what revised edition of the Greenland dictionary published by the same author in Copenhagen in 1926, an extremely valuable and instructive work, the result of collaboration between Danes and Greenlanders, but particularly Danish ministers of religion who have placed their observations and collections of words at the disposal of the author, who has had valuable assistance in the person of the well-known Greenland minister and writer, Hother Ostermann. The preparatory work was commenced as far back as 1911 by the then lecturer in Greenlandic, Christian Rasmussen, in collaboration with the author.

Danish interest in the Eskimo language is of old date. As early as 1656 the first linguistic notes made their appearance, but it was not until 1750 that the first Greenland dictionary was published by Poul Egede. Schultz-Lorentzen's dictionary is the fourth of the series and, as the author says in his preface, is not only based upon the previous publications such as Fabricius in 1804, Kleinschmidt in 1851, and Chr. Rasmussen's Supplement in 1893, but much has also been taken from old and new Greenland literature. To one who, having a knowledge and love for the Greenland language, goes through the book, it gives nothing but pleasure to see the manner in which the living language is represented in this dictionary. To a most excellent degree the author has succeeded in raising his work above the usual dry listing of words and has, in the space allowed him, given a wealth of apt examples of colloquial speech.

The book, one of 300 pages of large format and got up in a beautiful and dignified manner, will undoubtedly become a very popular handbook in a short time, not only with foreigners who wish to familiarize themselves with the difficult Greenland dialects, but also with Greenlanders who feel a desire to learn foreign languages. Considering the rapid development of culture during the past half generation, the dictionary will certainly have its great and particular mission among the native population.

It is a special pleasure to the writer of these lines to draw attention to this interesting work. After almost twenty years' study of Eskimo culture in Greenland, it fell to my lot from 1921 to 1924 to lead the Fifth Thule Expedition, which carried us to the Canadian and to the American and Siberian Eskimo. No one can have a deeper respect than we Danes for all that we owe to explorers in these lands, a long list of weighty, sometimes pioneer names, which have helped to give vitally important contributions towards the understanding of one of



the world's most interesting peoples, the Eskimo, who live scattered over half the periphery of the world, right from the coasts of East Greenland to the regions round East Cape, west of the Bering Strait. The reason why we Danes have nevertheless ventured beyond our own domains is, first and foremost, that we have felt a desire to form an independent view of Eskimo culture as it is expressed in other parts of the world. And behind this desire is not only the interest in that which others did before us, but, perhaps more than anything else, love and respect for the bravest, the hardest, indeed the most admirable of all primitive hunter races.

A Dane who has devoted himself to Greenland and the Eskimo lays a whole life's work before English readers in this book. May the book therefore secure an interested and sympathetic reception abroad, and also encourage a continued, penetrating study of Eskimo life and Eskimo culture in the countries that bear the responsibility of the development and future of this people.

KNUD RASMUSSEN



*Stenaiderbopladsen ved Klampenborg nogle Bidrag til Studiet af den Mesolitiske Periode.* ERIK WESTERBY. (Résumé in French.) 219 pp., 45 figs. Copenhagen, 1927.

Prehistory owes much of its progress to volunteers like Erik Westerby; it is especially indebted to Danish savants who have preceded Westerby. Thomsen was the founder of the system of prehistoric classification with his recognition of the ages of stone, bronze, and iron. Another Dane, Sarauw, furnished in Maglemose important data toward bridging the gap that was formerly supposed to separate the Paleolithic from the Neolithic Period. His work was supplemented through discoveries at Svaerdborg by Friis-Johansen, Jessen, and Winge. Now comes Westerby with valuable and confirmatory records from the Mesolithic station of Bloksbjerg near Klampenborg in the vicinity of Copenhagen.

Thomsen's stone age is now divided into four periods: Eolithic, Paleolithic, Mesolithic, and Neolithic. In the Mesolithic three phases have been recognized: Azilian, Tardenoisian, and Maglemosean. The Azilian has affinities with the Paleolithic. At Klampenborg Westerby finds that the Maglemosean passes over without a break from the Mesolithic to the shell-heap culture of the Neolithic Period.

GEORGE GRANT MACCURDY

#### AMERICA

*The Antiquity of the Deposits in Jacob's Cavern.* VERNON C. ALLISON. (Anthrop. Papers of the American Museum of Natural History, 19:293-335.) New York City, 1926.

This paper is primarily a geological study and as such should be reviewed by one or more competent geologists. Unfortunately I have not yet found anybody willing to undertake the task; but as the extraordinarily precise conclusions set forth are of importance to archaeology it is necessary to have someone estimate their value critically. Secondarily, if we may judge by the appended note, the paper is an attempt to rehabilitate the so-called mastodon engraving discovered in Jacob's cavern in 1921 and which was reported in *Science* (54: 357-8) and described in *Natural History* (21: 591-97).

As is well known to many readers of the *ANTHROPOLOGIST*, Jacob's cavern was excavated and presumably cleared of culture debris in 1903 by Professors Charles Peabody and W. K. Moorehead,



and their report was published as Bulletin 1, Dept. of Archaeology, Phillips Academy. It is also known, to some at least, that, prompted by the new discovery in 1921, Dr. Clark Wissler, later in the same year, made a small trial excavation, and likewise that in 1923 I dug a trench through the entire clay deposit to bedrock, said trench running from the extreme back of the cavern to the front, a distance of approximately sixteen meters. By a short lateral excavation this trench was incidentally connected with the Wissler trial pit, which itself was somewhat enlarged for purposes of better observation. The main trench was also extended some thirty meters down the talus slope fronting the cave to contact with the Little Sugar Creek valley floor. By way of results we found in the talus slope trench—down to an extreme depth of three meters below the surface—both well finished artifacts and skeletal material. In the trench inside the cave we had the same experience as Peabody and Moorehead twenty years before: we found nothing. Mr. J. L. B. Taylor, the owner of the cave; Mr. Vance Randolph, who had part in the new discovery of 1921; Dr. Allison, the writer of the paper under consideration; and three or four workmen were present. All knew that I had time and money to spend and at least some of them, including Dr. Allison, took part with me in closely scrutinizing the trench walls for cultural evidences, but not a solitary scrap of flint or bone was produced. In consequence of this we naturally filled up the trenches and I returned home.

Next I gave my attention to the engraved bone, which I had in my possession for fully ten months and which I studied almost daily at odd moments for several consecutive weeks. During this time I invited and utilized all the expert opinion I could lay hold of, including that of artists, anthropologists, and others. Some experimentation was also undertaken in attempting to make a duplicate specimen with primitive flint tools. The body of data and opinion thus collected was of course to be assembled as a report for publication and for more than a year I strove to complete it. My efforts, however, proved unavailing: I had to turn my attention permanently to other things.

This much was done, however. The examination of the engraved bone was carried as far as deemed necessary, and on December 28, 1923, in open meeting of the American Anthropological Association in New York City, I pronounced the said engraving as, in my opinion, a plain fraud. My reasons were the following:

1. The said engraved bone (with seven other perforated and partly engraved bones and a perforated shell—all now completely disintegrated) was admittedly found, not in undisturbed deposit, but in a heap of loose dirt on the cave floor. Its relation to the remaining cave deposits is therefore unknown and unknowable.

2. It is difficult to understand why seven out of eight bones (not to mention the shell) should have so quickly and so completely disintegrated when the eighth (our carved specimen) is on the whole in a fair state of preservation, as are also the three thousand or more bone fragments taken from various portions of the thin culture deposit found still covering the cave floor in 1923. The only explanation of this remarkable phenomenon would seem to be that the disintegrated specimens had been artificially aged or in some way tampered with.

3. Our new faunistic determinations for Jacob's cavern reveal only recent species—most of those already identified in 1903 by Peabody and Moorehead and now in addition the skunk, coyote, and a new variety of woodchuck. There is therefore no clear evidence of anything in the culture-bearing deposits that need be called Pleistocene.

4. Archaeologists are not familiar, so far as I can learn, with bones and shells perforated exactly after the manner of several of those found in Jacob's cavern by Taylor and Randolph on April 17, 1921. For example, the surviving deer humerus (the one carrying the mastodon and other engravings) is perforated laterally through the condyle—a performance exceedingly rare, if it occurs at all, among primitive bone artifacts. There was also (see illustration, *Natural History*, 19: 593) a phalangeal bone likewise pierced laterally through the condyle—a similarly unheard of performance. Lastly, after digging up some thousands of deer calcanea in California, the Southwest, Kentucky, and elsewhere, I have yet to see one that was utilized, or at any rate perforated for suspension in the manner of the three or four indicated by the Randolph illustration above cited.

5. The perforation of the surviving bone is unevenly circular or irregular, as if done with a knife rather than a drill; the surface of the perforation is fresh-looking, the pores of the spongy interior of the bone, so far as visible, are open and free from accumulated foreign substances; also there are no signs of wear or polish at the outer extremities, such as might be expected if the object had been carried for any length of time suspended by a cord.

6. The specimen as a whole shows little if any of that wear and polish so commonly found on awls and other bone objects used or worn.

7. Archaeologists are not familiar with exactly this style of art on bone in America, though something of the sort does occur, e.g., in western Europe. Also no similar engravings were found on any of the 3000 bone fragments recovered in the cave in 1923, and the Peabody-Moorehead report mentions none among the thousands of bones recovered in 1903.

8. The engravings on the surviving specimen give the appearance of having been fitted into the well preserved surfaces of the bone. At least it would be very strange for any ancient artist to have deliberately chosen a deeply cracked bone when presumably any number of uninjured specimens were available. And if the bone has cracked since the engravings were



executed, how comes it that the cracks should have steered so nearly clear of the incised figures, especially as the artificial incisions would naturally have tended to weaken the bone within the limits of their own particular range and not outside?

9. In the case of the mastodon engraving, although done with exceedingly shallow incisions, the color of the artificial incision surfaces is quite different from the surface color of the bone itself. This may mean that the two surfaces have not been subjected to the same degree of weathering.

10. The incisions, both deep and shallow, show such fresh surfaces and sharp angles as could hardly have been preserved on a really ancient object even if it had been lying still in the ground, much less if worn as part of a necklace.

11. The incised lines composing the engravings, or at least some of the lines, are of such depth, regularity, and precision as to preclude their having been executed with flint tools, no matter whether the bone was green or semi-fossilized.

These and other objections to the genuineness of the said engraved bone were duly communicated to both the writer and the editor of the paper, and if my remarks had been printed in full and credited to me I should not now revert to the subject. My observations may be entirely erroneous, but such as they are I still stand by them. The specimen is (or was) in such shape—having been dipped in both oil and heated paraffin—that critical ocular examination was far from satisfactory.

As to who perpetrated this to me obvious fraud, or why, I can of course have little to say. It is of no special importance to me personally and as a matter of fact of little interest. Archaeological frauds are common occurrences, as every dealer in antiquities knows. I have myself had to handle far too many of them in the last few years to give any of them special attention on this score. In this particular case, moreover, I have no grounds even for suspicion. I don't know the people around Pineville, having resided there only three weeks. Messrs. Taylor and Randolph, the discoverers of the engraved bones in question, are, on the other hand, in far better position to judge of the probabilities of the case.

We now return to a brief consideration of Dr. Allison's paper. It purports to present a chronological history of the Jacob's cavern floor deposits, natural and artificial, based on the study of a certain stalagmite removed from the cave in 1923. The plausible theory, presented by Dr. Allison himself, was that inasmuch as stalagmites are sometimes made up of layers indicating perhaps seasonal accretions, we might possibly by a study of this Jacob's cavern specimen

obtain some data as to the age of the cave and its various floor deposits. The fact seems to be that the stalagmite chosen was only partially suitable for the purpose intended. For, as the reader may easily perceive by examining Dr. Allison's diagram and photographs (figs. 6, 10, and 11), or by reading his brief textual treatment, neither the lower nor the upper extremity of this stalagmite reveals perceptible growth layers. The upper half of the central portion, which the author says shows some "15 places" of bedded structure (due, it appears, to the fact that the early cave occupants were thoughtful enough to sprinkle some kitchen refuse on their calendar) serves at best for nothing more substantial than an estimate. The "1213 years" thought to have elapsed during the growth of this part of the stalagmite are arrived at by calculation and not by actual count, as in the case of tree rings and clay varves; and this calculation itself is questionable because we can hardly be certain that the growth layers represent years. They may represent sporadic rainfalls. But, granting the reasonableness of the calculated 1213 year period, we are still rced with the fact that this "period" represents a completely detached section of the time scale for, as the writer himself states, "the stalagmite offers no evidence of when this 1213 year period began or ended." To fix its place in our current chronological scheme, Dr. Allison resorts to what seems to a mere archaeologist an exceedingly hazardous performance: he superposes his stalagmitic growth curve on a California redwood growth curve and tells us in effect that the inhabitants of Jacob's cavern became frisky enough to kick up the ashes in exactly the year 730 B.C.! The scientifically minded are supposed to court accuracy, and I personally would welcome nothing so much as an absolute chronology for prehistoric times, but this is too much. One may grant the probability of our stalagmite's having registered in a general way the increase and decrease in rainfall as indicated by the California redwoods; but how the two growth curves can be so precisely matched up must be left for others to discuss.

Anthropologists must also leave it for experts to pass judgment on the processes by which Dr. Allison calculates a certain small wedge-shaped peripheral stratum (layer 3 in fig. 16), imbedded in the clay floor of Jacob's cavern, to date from between 16,080 and 11,730 B.C.; to consider the probabilities of the remarkable statement (p. 325) that Jacob's cavern was not occupied by man between 11,730 and 1226 B.C.; and to explain how the bone with the engraved mastodon



figure becomes connected with "layer 3" and thus comes to date "back to somewhere around 16,000 to 12,000 B.C." To an outsider like myself the paper seems altogether too brief (in fact, is not complete in itself) for the many precise conclusions it professes to establish.

Dr. Allison then describes in detail his discovery in 1924 of "layer 3" above mentioned. It appears to be a second bone-containing layer confined, it seems, to a narrow space adjacent to the west wall and including the trial pit dug by Dr. Wissler. This is an interesting contribution. It substantiates in a measure what Dr. Wissler thought he found in 1921 and is even remarkable in view of what we failed to find in 1923. The writer states that with the bone fragments in layer 3 there were traces also of small flint chips and of charcoal. Such items do not of course prove man's presence; but in any case the legend to Dr. Allison's transverse section of the cave deposits (fig. 16, the source of which, by the way, is not explained) indicates that there were flint chips also in layer 2 above; as well as in layer 1, supposed to have been removed in 1903. It becomes therefore, a fair question whether we have in layers 2 and 3 really distinct strata. At all events we cannot on the evidence furnished attribute much importance to layer 3 as a repository of cultural data. It may represent nothing more than a depression close to the wall into which bones were washed from the roof fissure adjoining; or the bones, flint chips, etc., may even have rolled in from the superficial culture deposit on higher ground in the central part of the cave. It would be interesting, at least, to trace out the vertical disposition of layer 3 in a north-south direction to see if it does not connect with the main superficial culture deposit.

The very small fragments of animal bone obtained from layer 3—even if they form part of a separate and older culture stratum—furnish no evidence of a distinctly Pleistocene fauna. And while Dr. Allison states that the matrix itself yields chemical indications of being in large part made of decayed bone—probably bones of large mammals—this chemical composition can doubtless be explained in other ways. Large bones, any bones, do under special conditions decay or are transformed into lumps of phosphatic substance, but those who have had considerable experience in digging out Pleistocene deposits know that all bones, large and small, and certainly teeth, are as a rule well preserved. But why precisely should bones of any large animal occur in a cave the deposits of which are supposed to

date from Late Pleistocene times? What large mammals, except the horse, roamed over the locality? For a partial answer it may be stated that when it comes to the character and composition of Late Pleistocene fauna there is no place, probably, on the whole American continent about which we are better informed than we are about just this southwest sector of the Ozarks. For in the very year that Peabody and Moorehead excavated Jacob's cavern, Barnum Brown of the American Museum was at work in the great Conard Fissure only about seventy-five miles away to the southeast in Arkansas. Thousands of skulls and jaws (not to mention body bones) of a partially extinct fauna were obtained and no large mammals such as the mastodon, e.g., were among them. This is negative evidence, of course; as is also the fact that two seasons' work at the Conard Fissure yielded no suggestions of man's presence in Late Pleistocene times; but it is evidence, nevertheless, that cannot be ignored.

It is necessary to say a word about Dr. Allison's physical and chemical investigations of the engraved bone. Regarding his tests as tests, no anthropologist can have anything to say. But as regards the execution of such tests to make them really applicable to the solution of the archaeological problem confronting us, several things might doubtless be said. One is that I hope it is true even in chemistry and physics that two things not equal to the same thing need not be equal to each other. Dr. Allison subjects three bones to identical tests; but he neglects, in the first place, to take identical bones, and he neglects in the second place to give the two bones chosen for comparison identically the same preliminary treatment that Mr. Taylor gave the original bone. Another is that if the statement on page 332 claiming the engravings on the original bone to be as old as the bone itself rests on rigid chemical analysis, the precise data are not given; and if, on the other hand, it rests on mere ocular inspection, the expression "oxydized to approximately as great extent" hardly meets the requirements of the situation.

And so, for the present at least, let the Jacob's cavern mastodon rest in peace. Meanwhile we might possibly get some more light on the subject by heeding Dr. Allison's recommendation to have Jacob's cavern and the talus slope in front completely excavated. I cheerfully second this recommendation and would add the suggestion that inasmuch as Professor Moorehead is still full of energy he be asked to complete what he commenced twenty-four years ago.

N. C. NELSON



R.F. Heizer

Cave • San Martin mountain  
Los Angeles Co California  
Perforated Stones

We have also received, by the payment of expenses to the collector, a singular and important collection of objects, found by the Rev. Stephen Bowers in a small dry cave in the San Martin Mountains, Los Angeles Co., California, in 1885. The following abstract of Rev. Mr. Bowers' account of the objects and their discovery will give an idea of these interesting articles which, very likely, had been hidden in the cave by Indians many years ago. They may have been the property of some leading man of the tribe, but the number of each kind is remarkable.

"The cave was about twelve feet by sixteen. In it were nine baskets from six to twenty inches in diameter, made from tule, one of which contained fourteen pieces of red-wood about a foot long, notched, and painted with red and blue in streaks. Some of these sticks had as many as one hundred notches, and each stick was perforated at one end. Another basket contained thirty-three headdresses, from four to five feet in length, made of feathers; another, forty-five whistles made from the tibiae of deer, the "stop" being formed by inserting a mass of asphaltum, and the larger end of the bone covered with asphaltum in which is embedded a piece of haliotis shell. The most important objects found were four perforated stones mounted on handles of the hard wood of the bearberry, held fast in the holes by asphaltum. The cave gave no evidence of having been used for any other purpose than as a place of deposit for these articles. Considerable basket work was discovered in the débris, as also a haliotis shell-cup, a shell ornament, an implement made of deer's antler, and a smoothing implement made of serpentine. No determination could be arrived at as to the length of time the articles had been in the cave; but, as it was perfectly dry, they may have been there for centuries."

Of particular interest in this lot are the four perforated stones, of the same character as hundreds which have been found in the



Indian graves in Southern California and also in various other parts of the world that such circular stones of different sizes with central perforations, were used for many purposes I have pointed out in an ~~article~~ account of perforated stones published several years ago! and I then suggested that some of the California stones were probably mounted upon handles for use as clubs. The four specimens from the Caves show, at least, one method of mounting such stones on short handles by means of a pasturing of asphaltum.

However only one of the four handles is of convenient size for holding in the hand the other three being so slender that unless the wood when fresh, was of extreme



toughness the handles would have snapped if a hard blow had been given with the club. The handles are also perfectly straight without knobs or a rough portion at the end.

but an African club in the Museum has a straight smooth handle, and the terminal knob of most Club handles must be regarded as a developed feature of the weapon. If however such short-handled clubs, as those from the Cave were used for throwing, as were the African knob-kerries, the smooth handles would be desirable and its size would not be of much account if of sufficient strength to sustain the blow when thrown.

1 vol 7 1/2 p 135 189 U.S. Geographical Survey  
west of 100 Meridian Lt. G. M. Wheeler,  
Rep Peabody Museum 1887 vol 3 no 7



COPY

Palmdale, Calif., August 30, 1926.

Dr. P. Clements,  
Los Angeles Chamber of Commerce,  
Los Angeles, California.

Dear Sir:

Regarding the Indian Reservation located six miles Northwest of Bishop, in the Inyo and Mono County, originally the holdings of the Piute Indians.

Will say that we should act at once to save the old ground for the benefit of the Indians, true the Tufa Stone on the ground is valuable and used for Building material and Art Work but that could be leased from the Indians by responsible parties, still preserving the beauty of the Grounds and Caves which speak of untold hardships and toils of the early Indians.

The Caves are gouged out of solid Stone, carved with Indian signs, of course an individual Indian would be helpless as he has long since lost all initiative of his forefathers and become as dependent as a child, but it can be made a revenue maker for the Indian Bureau.

As a Sculptor I fully appreciate the beauty of this stone and its value to put on the market as building material, the latter could be done without destroying the last of the old caves and other works of the Indians.

I would like to hear your opinion as soon as possible in regard to what you believe can be done toward saving these priceless relics. I would also like to meet Mr. Goodrich and talk the matter over with him.

Very sincerely yours,

(Signed) Vera R. De Font.



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September 17, 1926

Dr. C. Hart Merriam,  
Lagunitas,  
Marin County,  
California.

My dear Dr. Merriam:

I am enclosing a copy of a letter referred to us by the Los Angeles branch together with a copy of my letter to Mrs. De Font and to the department at Berkeley.

I thought these might be of interest to you and that you might be able to give us some information and an opinion on the matter.

Cordially yours,

*Alida C. Bowler*

(Miss) Alida C. Bowler,  
Executive Secretary.

ACB:MH  
Encl.



September 17, 1926

Mrs. Vera R. De Font,  
Palmdale,  
California.

My dear Mrs. De Font:

Doctor George P. Clements of the Los Angeles Chamber of Commerce has referred your letter of August 30th to Mr. Chauncey S. Goodrich, President of the Northern Association. Doctor Clements was to be in Mexico for a month and wanted your inquiry to have some attention at an early date.

Unfortunately, Mr. Goodrich is also away, but he will return about September 20th and will then give the matter some thought and you will doubtless hear from him shortly thereafter.

Meanwhile, I am taking the liberty of writing to the Anthropology Department at the State University at Berkeley, thinking possibly you may not have written them and that they would be interested and possibly of some service in this matter. I will enclose a copy of my letter to them in order that you may know just what information has been sent to them.

Cordially yours,

(Miss) Alida C. Bowler,  
Executive Secretary.

ACB:MH  
Encl.



September 17, 1926

Dr. Erland Nordenskiöld,  
Anthropology Department,  
University of California,  
Berkeley, California.

My dear Dr. Nordenskiöld:

I am enclosing a copy of a letter from a Mrs. De Font of Palmdale which has been referred to us. It seemed to me that perhaps some members of your department might be in possession of complete information regarding the Indian records referred to in the letter and that they might be interested.

If you should get in touch with Mrs. De Font I would greatly appreciate having a carbon copy of your letter in order that we may know what action is being taken so as not to duplicate or interfere in any way. Also, we would appreciate having some information regarding these "Caves ----- carved with Indian signs". We have no information about them and, therefore, are unable to have any opinion as to the importance of their preservation. We should greatly appreciate having an opinion from your department on the matter.

Sincerely yours,

(Miss) Alida C. Bowler,  
Executive Secretary.

ACB:MH  
Encl.



Cemeteries

C. Hart Merriam  
Papers  
BANC MSS  
80v18 c



A venerable California lady, of lively memory, the proprietor of the Santa Rosa Ranch, a few miles distant from the Mission of Santa Ynez, gave me the following information in April 1863. She had resided over 30 years at and near the old Mission, where her husband had been in charge as corporal, serjeant, and mayor domo since about 1825. . . There used to be 7 Captains of rancherias living on the ranch she now owns, when the Padres founded Santa Ynez some 60 years ago. In a fine alameda of cottonwoods in the valley near her house, was the great Council-grove of the 7 rancherias, and they were always engaged in war with their neighbors, and had native dogs. The rancheria near the house was called Situchio, from their god who was a dog; who, they believed rose from the large spring in the willows, where her family now do all their washing. The cemetery, a few yards off, on this high mesa close by, was very large and old. The Indians used to bury their dead here, sitting down and inclosed in a box made of flat slabs of hard claystone, in which were interred with the deceased his mortars, beads, war implements, stone knives, etc., and then covered over with another flat stone, making a regular sepulcher, of cunning formation. Another piece of stone was then placed at his head, like the whale-bones in the cemetery of ~~Partee~~ Partocac, of the Goleta rancho, near Santa



Barbara. The Santa Ynez Indians had similar cemeteries at the Kalawassa and Tekepis, in the upper part of the College ranch, further up the river of Santa Inez."--  
A. J. Taylor, Calif. Farmer, May 22, 1863.

August 28, 1863.

"Near the sites of all the old rancherias of California may be found a cemetery of the neighboring clans for the burial of their dead. Some 30 of these are still well known in the county of Santa Barbara. They all assimilate in appearance. That of Kalawassa, 5 miles above Santa Ynez Mission on the river-bank, may answer for a description of all of them.

This cemetery covers a space of about 20 acres, and is covered with the head and body-stones over the separate graves of each defunct Indian. Each grave is about three feet from the other; the stones are those waterworn by the river; large ones being for the head and feet. There seem to have been several hundred bodies buried there. The cemetery is on a gentle slope, and answers to the description of some of those of Central America. The bodies are found very old and decayed, and with them (as we have witnessed) large and small mortars and pestles, sand-stone metates, beautifully worked slate saucers, shell money, flint arrow-heads, flint knives, sand-stone dishes two feet long, perforated slate pipes a few inches long and other smaller utensils of the household. The bodies are



sometimes found enclosed in a wall of round or flat stones,  
and some of them seem to have been interred at <sup>whole</sup> full length,  
while others are said to be found sitting down; the latter  
is still the custom among many tribes of California Indians  
from Cape St. Lucas to Shasta. Near the cemetery of  
•Tekepis, 6 miles from •Kalawassa, further up the river, there  
are two large sandstones, three or four feet in diameter,  
flattened on the top and set in the ground, which are  
covered with circles grooved in the stone, and seeming to  
represent the figure of the sun or moon. Some of the mortars  
will hold five gallons and are as well worked as if by a  
stone cutter. Some of the pilas or saucers were beautifully  
made of black slate, cut sharp with the knives or scrapers  
of flint, agate or jasper, so abundant in all the mountain  
districts. . " -- Calif. Farmer, Aug. 28, 1863.

A.S. Taylor California Farmer, May 22 & Aug. 28, 1863.